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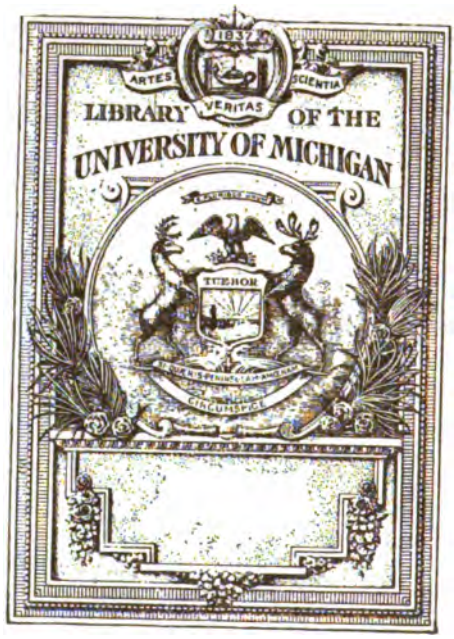

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MEDICAL LIFE

A Journal of Contemporary and Historical Medicine

VOLUME XXVIII

Numbers 4-15 of New Series

JANUARY-DECEMBER, 1921

NEW YORK

MEDICAL LIFE PRESS

12 Mt. Morris Park West

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The Physician's Prayer

Without hauteur or the braggart's tongue, not with an assumption of superiority over others, but as students seeking the truth, and as men sobered by the part we play in the drama of life-and-death, conscious of our limitations, rejoicing in what we have achieved throughout the ages, grateful for the many discoveries of modern times, with a vision of what is yet to be, let us press forward to the work that lies before us in the long road to our dream of the diseaseless future!

VICTOR ROBINSON, M.D.

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MEDICAL LIFE

A Journal of Contemporary and Historical Medicine

"The Merger of Five Medical Magazines"

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CONTENTS FOR JANUARY, 1921

Gallery of Eminent Physicians:
Adolf Kussmaul—IV 2
Life's Thermometer:
A Problem in Mathematics.....3
Provocative of Profanity 4
How to Live 4
Influenza Vaccine, by A. L.....6
The January Contributors.....7

Department of Medical History:
Medical Education in Chicago, I, by Bayard Holmes.....8
The Life of Jacob Henle, VI-VII, by Victor Robinson 13

Medical News:
Another Noguchi Triumph 26
The Mosquito in the Movies....27
Born in a Pigeonhole.....27
Thyroid Transformation 28
Medical Journals Wanted 28
Saving Cerebration 30

Topics in Tabloid:
The Granny-Doctor 31
Health Insurance 31
An Intolerable Situation 31
Protein Food and Blood Pressure 31
Weigh Your Neurasthenics 32
The Last Chapter of Yellow Fever 32
The Physician as Patient 32
The Antiquackery Monthly 32
Focal Infections in Urology....32
Christian Science and Jewish Followers 32

Department of Sexology:
A Landmark in the Venereal Disease Campaign, by William J. Fielding 33
Is Abortion Becoming Ethical? A reply by Alfred W. Herzog 36
Is Abortion Becoming Ethical? Comment by James F. Morton, Jr. 43
Mr. and Mrs. Carney.....44
Birth Control and Medical Incomes 45
Sex Education and Venereal Infection 46
Is Continence a Desideratum?..46

After Office Hours:
A Psychoanalytic Novelist, by Gorham B. Munson 47

Vol. 28 No. 1

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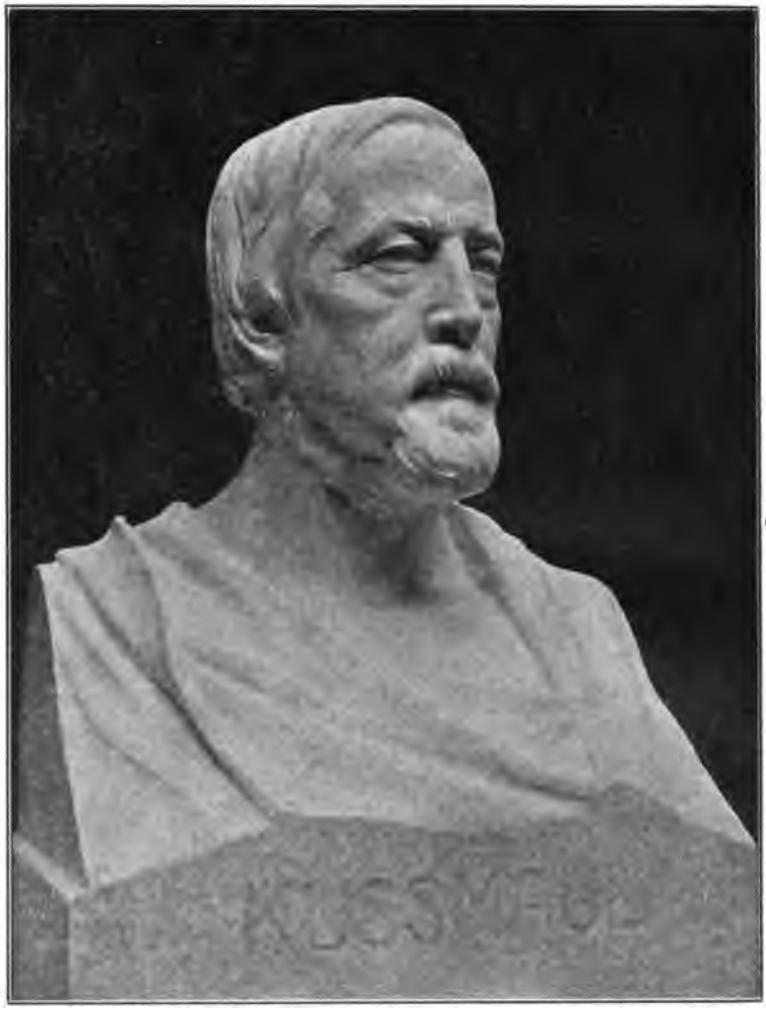

ADOLF KUSSMAUL

(1822-1902)

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Medical Life

A Journal of Contemporary and Historical Medicine

INCORPORATING THE

MISSISSIPPI VALLEY MEDICAL JOURNAL
MEDICO-HISTORICAL BULLETIN
DETROIT MEDICAL JOURNAL
AMERICAN JOURNAL OF UROLOGY AND SEXOLOGY
NASHVILLE JOURNAL OF MEDICINE AND SURGERY

(*Established* 1851)

VICTOR ROBINSON, M.D., *Editor.*

VOLUME 28 NUMBER 1 | JANUARY, 1921. | NUMBER FOUR OF NEW SERIES

N. 11-4-23. 1.M.

Life's Thermometer

A Problem in Mathematics

Whitman-like, as we passed through the populous city, we saw a school-house being built. Everyone is old-fashioned in at least one respect, and we admit we believe in the public-school system of America—are we its sole surviving admirer? With pleasure we watched the building rising from its foundations, and then walked on for a few paces—until we met a garage also in process of construction. Thereupon we thought of the declaration of C. M. Talbert, at the Congress of the American Electric Railways Association:

> Ninety per cent of all accidents may be said to occur in public highways, and automobile fatalities have grown from nine per million population, to 110 for each million inhabitants in 1920, or in the United States, one death every thirty-one minutes of the sixteen commonly allotted waking hours.

As a rule we avoid figures, but on this occasion, all unbidden, the following little problem in mathematics intruded itself:

Since the automobile has a victim every half hour, and since this school and this garage will be completed at about the same time, how many children from that school will be run down, maimed and murdered by automobiles from that garage?

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Provocative of Profanity

The All-America Conference on Venereal Diseases, which William J. Fielding describes in our department of sexology, was indeed a beacon-light on the highway of progress. In one respect, however, the light sputtered. The executive secretary, while pleading for publicity for the Conference, added this suggestion:

To Editor: If your readers won't stand for "venereal diseases" please use David Starr Jordan's euphemism and call it the "Great Red Plague."

We know one editor whose comment was—but do your own swearing!

How to Live

If there is one man in this world whom we admire, it is Ralph Stock. Why do we take off our hat to Ralph Stock? Because he knows how to live. And whoever has mastered the art of living, has learnt the greatest thing in life.

The January issue of the National Geographic Magazine serves as Ralph Stock's confessional, for herein he says:

My dream has been to cruise through the South Sea Islands in my own ship. I can't help it; that has been my dream; and if you had ever been to the South Sea Islands, and love the sea, it would be yours also. They are the sole remaining spots on this earth that are not infested with big-game-shooting expeditions, globe-trotters, or profiteers; where the inhabitants know how to live, and where the unfortunate from distant and turbulent lands can still find interest, enjoyment, and peace.

Ralph Stock had little money, but he managed to buy a Norwegian-built lifeboat. He named it the *Dream Ship,* equipped it with an auxiliary engine, studied navigation for three weeks, and was ready to voyage forth to the gardens of the Pacific. The crew? Ralph Stock took along his sister Peter, who wore pajamas on deck and proved an invaluable mate, and Steve, a "recently demobilized officer, who, on hearing that these same islands were not less than three thousand miles from the nearest early-morning parade, offered his services with almost unbecoming alacrity."

Then ho for Tahiti! where captain and crew enjoyed delights never to be known to the denizens of Broadway. Ralph Stock revelled in the atolls—the fairy rings rising from the sea; he lay in the taro patches of Papeete, and modernism with its harsh commercialism and shrieking automobiles, seemed far away; in the Marquesas the only disease he encountered was the pearl—which is a disease of the oyster. He visited Palmerston Island, which years ago was leased from the British Government by John Mas-

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ters, who "not believing in half measures, took unto himself three native wives. By each he had a large and healthy family, which he reared in strict accordance with his own standards of social usage. That they were sound standards is evidenced in the people of Palmerston today. They read, write, and speak English, this last with an accent vaguely reminiscent of the southwest of England. They are courteous, hospitable, and honest to a degree nothing short of startling, these days, and although naturally inbred, they do not show it, either mentally or physically."

Ralph Stock had found the earthly paradise. Boresome is London, prosaic is Paris, compared with this gem that prodigal nature flung into the South Sea:

> Neither atoll nor island, it is a perfect combination of both, a natural necklace of surf-pounded coral strung with six, equidistant, verdant islets, the whole enclosing a shallow lagoon slashed with unbelievable color. . .

Under what cocoa-nut tree is Ralph Stock now basking, with Peter and Steve? Alas, this is a story with an unhappy ending. Ralph Stock in a moment of aberration, succumbed to the most prevalent disease of our times—he sold the *Dream Ship* for a pot of money. He does not hide his shame, but confesses that his *Dream Ship* vanished in a commercial transaction. For a time he deluded himself with the hope that with all this money he would buy a "far more magnificent ship," but everywhere he searched in vain. A *Dream Ship* comes to a man only once in a lifetime.

So we do not admire Ralph Stock so much, after all. We are looking for a child of the twentieth century who will toss the gold into the sea, and keep his *Dream Ship*. We ourselves would make immediate preparation for departure to these colorful isles of ease —but we must prepare copy for the next issue of MEDICAL LIFE.

We Acquire Another

The October issue of MEDICAL LIFE stated that we had absorbed *The Mississippi Valley Medical Journal* and *The Medico-Historical Bulletin;* in November we announced that we had acquired *The Nashville Journal of Medicine and Surgery* and *The American Journal of Urology and Sexology*. We begin the new year with the acquisition of another—*The Detroit Medical Journal*. MEDICAL LIFE, as at present constituted, thus represents the merger of five medical magazines.

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Influenza Vaccine

History is, as a rule, not written in one year nor in ten years. Occasionally, however, it happens that history is made in a short time. Such, for instance was the case with the political history of the world during the last four years and such was also the case with medical history in connection with the latest influenza epidemic. It was only two years ago that influenza appeared in this country and devastated cities and now one seldom hears of a case of influenza. It has gone down to history.

From the standpoint of the historian, the influenza epidemic is interesting not only as a destructive disease, but also from the standpoint of the remedies applied for its prophylaxis in treatment. It was only two years ago that the medical journals devoted page after page to the vaccine treatment of influenza. Men who established reputations in the medical world by stable scientific research gave up all other work and grew various organisms from which they made a vaccine to be used as a protection against influenza. The vaccine prophylaxis became practically as epidemic as influenza itself.

Very few dared to doubt the efficacy of the vaccine, still fewer dared to express their doubts in public. McCoy, of the United States Public Health Service, was possibly the only man who at the height of popularity of influenza vaccine dared express his opinion based on statistical reports that influenza vaccine had no beneficial effect.

Now only after a lapse of only two years one can hardly find a dozen people in the country who still consider vaccine of prophylactic or curative value in influenza. Matters have so turned that those workers who, during the height of the epidemic were haled as heroes and as saviors of humanity, are now looked upon as persons who jumped to conclusions prematurely and whose work is not of lasting value.

The story of Influenza Vaccine teaches one that not every remedy used extensively during an epidemic can survive the epidemic and that not every article written in medical journals during the time of stress can be considered classic literature. A person who really understands medical history knows that remedies come and go, that remedies may be just as much of a fad as the style of dress, and that a remedy cannot be considered valuable unless it withstands the acid test of time.

Chicago. A. L.

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The January Contributors

BAYARD HOLMES contributes the first installment of his autobiographic serial, *Medical Education in Chicago, in* 1882 *and After*. As professor of surgery in the University of Illinois, as organizer of the Chicago Medical Library Association, as editor of the North American Practitioner, and as author of Surgery of the Abdomen, The Friends of the Insane, Hieratic Egyptian Medicine, Adolescent Insanity, and Dementia Precox Studies, Dr. Holmes has been a conspicuous figure in the educational circles of medical Chicago, and is well-qualified to discuss the subject in retrospect.

A. L., whose *Mortimer Frank and Stanton Friedberg* appeared in our October issue, writes on *Influenza Vaccine* from the perspective of a student of medical history.

WILLIAM J. FIELDING contributes *A Landmark in the Venereal Disease Campaign*—a review of the All-America Conference on Venereal Diseases, held in Washington. Mr. Fielding's volume, Sanity in Sex, was recently published by Dodd, Mead & Co.

ALFRED W. HERZOG replies to Herman Dekker's *Is Abortion Becoming Ethical?* Dr. Herzog is Clark Bell's successor as editor of the Medico-Legal Journal.

JAMES F. MORTON, JR., likewise comments on Herman Dekker's November article, *Is Abortion Becoming Ethical?* Mr. Morton, although a Harvard man, has been the leader of a host of "forlorn causes": an early advocate of birth control, member of the American Secular Union, New York Single Tax League, National Association for the Advancement of Colored People, Rationalist Association of North America, president of the Thomas Paine Natural History Association, and consul of the Universal Esperanto Association.

GORHAM B. MUNSON, a young author who writes for such esoteric publications as the Smart Set and the Freeman, contributes the first installment of *After Office Hours*.

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MEDICAL HISTORY

Continuing the
MEDICO-HISTORICAL BULLETIN

Medical Life is the only monthly publication in the English language specializing in the history of medicine, and thus constitutes a distinct contribution to culture.

MEDICAL EDUCATION IN CHICAGO

In 1882 and After

By BAYARD HOLMES, M.D.

I—Ragweed Time

After teaching school ten years and filling in the summer vacations with surveying or other outside work, I determined to study medicine and become a doctor. My ideal was Dr. E. A. Boardman of Elmira, Stark County, Illinois, and such a doctor I determined to become.

He lived on a large farm bordering on the Spoon River, since famous for its anthology. The colonial house was back from the road on a hillside, and two miles or more from the little village of Elmira. Just south of his house was his Greek Shrine-like office, dedicated to Æsculapeus and Hygiea, and surrounded by the sacred groves of the botanical garden, the richest in Northern Illinois, planted with the rarest and choicest species of trees and shrubs in the Mississippi Valley. In the adjoining river bottoms was the carefully preserved flora requiring much water, a sort of annex to the more familiar horicultural garden near the house.

Pilgrims with bug boxes and herbariums and the prevailing attire of the naturalist of the day journeyed to this scientific shrine from over the whole world. They found in the white temple of Æsculapeus boxes of insects, collections of galls, mounted displays of insects, plants and moulds parasitic of agricultural products in close proximity to specimens of diseases of men and animals. The remaining wall spaces were covered with scientific books and magazines, many of them inscribed with thankful obligation over the author's name, and in odd corners were framed the portraits of scientific visitors or letters of distinguished correspondents.

Probably every visitor was impressed with the open gate at the turn of the road, and the loaded table when the farm bell rang for dinner, the genial welcome of Mrs. Boardman displaying her jewels in new frocks and clean faces filling one side of the long table.

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Though one of these children has since been a medical student and his father and mother have both passed on, the inspired picture remains with me. I have never visited Stark County or the Spoon River, and the sanctified memory of my youth has not been dimmed by observing the sordid changes of modern progress.

It was ragweed time in 1882 when I took the Cottage Grove bobtail horse-car to visit the Chicago Medical College, with a view to matriculation. These cars were very old, and blue was their original color. Their four wheels were close together and they bobbed in a peculiar manner over the rough track, each side of which was an open ditch supporting a rich growth of ragweed and stramonium. It took a long while to get up to 26th Street this hot day.

The Medical College was on the corner of Prairie Avenue and 26th Street, a building one hundred twenty-five feet long by sixty feet wide, and two stories high. The old Mercy Hospital was adjoining. The basement of this building was in use as a dispensary when I got there, and the alert young doctor who met me at the door took my name and address, and began to question me about my clinical history. When, however, he discovered I was a prospective medical student, he showed me confidentially the several clinical rooms, with stripped patients, suppurating wounds, and splinted and bandaged fractures, and I recognized the horribly dirty and inadequate equipment and the careless and trifling attention by the hurried clinical teachers.

My guide then took me up to the deserted school rooms. It was the noon hour and there was no one in the office. We walked over the dusty, dirty and deserted amphitheatres, inspected the foul smelling and gruesome anatomical laboratory, peeked into the lonesome museum, and at last came to the chemical laboratory, where Professor J. H. Long was in the midst of some intricate analysis, which must have been going wrong for he was in a terrible temper. This scared my guide away, and I was left facing the Lion, fixed to the spot by the beautifully glowing combustion tube and the elegantly constructed attached apparatus. The Lion continued his low growling, but in spite of the heat of the room I stood by and watched the experiment to the end. There was no conversation between us. Professor Long got me out of the laboratory without using force, and though I always respected his scientific skill and devotion, we never got together, greatly to my regret, and apparently there was a failure on the part of both of us to ever feel comfortable in one another's presence.

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Years later when my bacteriologic laboratory adjoined his chemical laboratory, we never met in the narrow hall, and we never borrowed or lent apparatus or reagents, though we passed the customary salutations when we inadvertently met. This was a great sorrow to me, and years afterward when I had become genially acquainted with his gifted and erudite son, I confessed my humiliation to him, and my real regret that we who had striven for the same ends in medical education should never have enjoyed a personal acquaintance. While separated by no feeling of caste or cult, we never came close enough to even differ. It is because of such experiences in which my life has been segregated from that of other men whose ideals and achievements have been similar to or consonant with my own, that I have regretted my lack of a conventional social education, and felt that my isolated life on a farm and in a shop, which had equipped me with a sturdy body and a rational mind, had failed to equip me with the manners adequate to express my good will and my appreciation of my equals and my colleagues.

The course of a study at the Chicago Medical College was a graded course with final examinations at the end of each year. Three years were required. There was no histologic or pathologic laboratory, and the few microscopes were almost ludicrously antiquated.

My day was passed at the College buildings and the evening at a negro minstrel show at the theatre on Monroe Street afterward called the Columbia. My night was at the St. Charles Hotel on Clark Street.

The next morning I went to Rush Medical College and began my investigations, again in the basement clinics. This time I was not taken for a patient but for a student, and I had to refuse a card prepared for some other fellow. The clerk took me through the clinics and then into the chemical laboratory, and introduced me to that friend of all medical students, Professor Walter Haines. He was at work on an arsenic determination, and he took the most artistic method of demonstrating the process to me, using the simplest but the most conclusive methods. Though the apparatus and process were already familiar to me, and I had taught several classes to make this demonstration as a part of their course in inorganic chemical analysis, the beauty, the pedagogic conclusiveness, and the comprehending sympathy of this incidental lesson charmed and gripped me, and initiated a lasting devotion which has

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ripened into friendship and worship even, which so many medical students grant toward this frail gentleman. In after years we occasionally met, and always with a perfect understanding and confidence, and only yesterday it seems, I heard his voice pronouncing my name on Adams Street, and looking through the crowd, there he was, just as young, it seems to me, and just as alert and frail as thirty-nine years ago.

The clerk of the College, whom every old Rush man will remember as his friendly enemy or as his hostile friend, reluctantly took me over the old Rush College. The Presbyterian Hospital was not yet begun. With great pride he showed me twelve demonstration microscopes that could be passed about the amphitheatre and the mounted specimen could be observed by the student if he would hold the instrument like a sterioscope and elevate it to the skylight, as if he were making an astronomical observation at the zenith. He showed me also a huge binocular which was kept covered by a bell glass. There were chemical desks for twenty-five students working at a time in the chemical laboratory and in the histologic laboratory there was one microtome and three tables. Rush was graduating 150 students each year at that time.

The next summer I attended a short summer course at Rush and renewed my acquaintance with Dr. Haines, and listened to the illuminating histologic lectures of Dr. E. P. Davis. Most students will remember him in obstetrics but he gave an excellent course in histology, and as memory serves me he used the old class microscopes.

One day during this summer course there was a notice on the bulletin board that Dr. W. T. Belfield would perform an autopsy and give a lecture on tuberculosis at the County Hospital Morgue. As I had a medical student's ticket for the County Hospital that cost me five dollars, I was privileged to go. Dr. Belfield had lately returned from Europe, and had written a wonderful book on genito-urinary diseases, the early chapters of which had fascinated me. The morgue was in the rear of the County Hospital, and the autopsy amphitheatre was above the dead house. We climbed a narrow flight of stairs and came down into the close seats where our knees punched the men in front of us in the small of the back. The place smelled horribly, and this was my first autopsy. The amphitheatre was soon full and as it was a hot day in May the place was stifling. The emaciated corpse was brought in on a stretcher and dumped on to the revolving copper autopsy table. One of the County Hospital internes began to cut open the chest

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and abdomen as Dr. Belfield recited the history of the patient and the physical antimortem findings. The examination of the sputum was particularly accented and students were invited to come down into the arena and see the newly discovered *Bacillus tuberculosis of Koch.* Then the manner of staining was actually demonstrated upon the squeezings from the lungs of the cadaver, which had now been silently autopsied by the interne. As my memory serves me this was the most concise, complete, and convincing pathological lecture I have ever heard. It remains in the foreground of my mind whenever tuberculosis is called to my attention.

Dr. Belfield had not then been combatted long enough to arouse his subsequent manner of discussion, which was often cynical and ironical. But to me his manner has always been intelligible and explicable. He was a medical scout who brought disagreeable news to those who did not wish to change their minds, and were satisfied with the hereditory factor on which they explained their etiologic theory of tuberculosis.

After my delightful talk with Dr. Haines and my inspection of the equipment at Rush College, I went over to the new College of Physicians and Surgeons, in front of the County Hospital. There again the dispensary was my first reception room. The director was also the druggist and he sat in front of the drug room door reading, with his feet high on a chair in front of him. He told me to look around for myself, everything was open. The clerk was downstairs eating his dinner, and would be up to attend to me in half an hour or so.

I wandered about the new place, smelling of pine and paint, but found it destitute of pedagogic armamentaria. The new chemical laboratory was 25 x 100 feet, light and high, and the anatomic laboratory the same size, both guiltless of any disorder or refuse. As the other Colleges had been offensively dirty, dusty, and stinking, so this new medical schoolhouse was alarmingly clean and new. It had been in use only a few months, and did not appear promising to a practical schoolmaster. The clerk was so long at dinner that I decided to get myself a lunch, and went over the two open gutters along Ogden Avenue to a restaurant that advertised an "opening," and sat down with a lot of medical students, tired, dirty, sweaty, and disappointed, to a twenty-five cent lunch, beginning with soup, having a real beaf steak as *pièce de resistance,* and ending with apple pie. My real adventure in medical education was yet to come.

(*To be continued*)

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THE LIFE OF JACOB HENLE

By

Victor Robinson, M. D.

CONTENTS

I. BOYHOOD DAYS
II. THE MEDICAL STUDENT
III. ADVENTURES IN BERLIN
IV. THE ZÜRICH PERIOD
V. ELISE EGLOFF
VI. PROFESSOR IN HEIDELBERG
VII. THE CALL TO GÖTTINGEN
VIII. THE JUBILEE
IX. CONTRIBUTIONS TO SCIENCE

VI

PROFESSOR IN HEIDELBERG

The most vivid description of Henle in Heidelberg was drawn by a student who did not follow the Henlean path, but became one of the greatest clinicians of the century—Adolf Kussmaul. In his old age, recalling the memories of his youth, Kussmaul devoted a chapter to Henle from which we extract these picturesque passages:

Henle's lecture was like a fresh, clear brook, upon whose lightly-stirring surface merry lights were playing. Although he framed his sentences in a simple manner, and retained his poise and calm, he was always entertaining, and his remarks, his humorous comparisons, and his sudden and unexpected flashes of thought, permitted of no ennui. When he said a witty thing, there was a smile upon his lips, he touched the tip of his nose with his finger, and threw his head a little to one side, as though he wished to shake off this idea which escaped him while off his guard. Within a short time, the youthful professor won the favor of his audience. His academic and political past contributed to it that the students loved and honored him. A small sword-cut upon his left cheek reminded them that he had belonged to the Burschenschaft, and was therefore arrested and confined in the Hausvogtei. There, too, shone about his head the halo of a romantic love.

Henle's marriage with a charming girl from the lower classes—he, however, had his sister educate her—corresponded with the social tone of the time. It was the medical men who arrived at the conclusion that the anatomical equality of Eve's daughters should extend to social equality as well. Several of my acquaintances, and two honored professors of the faculty of medicine of Strassburg, stepped down from academic heights to take back with them untutored daughters of the people. A story reached me, in the spring of 1847, how a Heidelberg teacher and anatomist, a pupil of Henle, was given his congè by a pretty child of the merry Pfalz. He wished to follow his adored master not only in the study of medicine, but in the choice of a wife as well. His young, fresh waitress appealed to him, and he made her a proposal of marriage with

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the proviso that she should first be educated in a private ladies' school at his expense, so as to be fitted for the position which she was to occupy as his wife. But he fared badly. She flared up and demanded to know whether he was in his right senses; she told him she already had a sweetheart for whom she was well enough educated; a trim butcher, who outweighed two such lean doctors.

In the forties, science had not secured its divorce from superstition, for their union was upheld by many professors who were better versed in piety than in pathology. The name of Obermedizinalrat Ringseis means little to the present generation, but in his day he was a power in Germany; the filling of numerous posts depended upon his judgment, and this man firmly believed that disease was due to sinning against God, and could be cured only by the grace of the church. Moreover, a host of system-spinners performed no experiments, but built up fanciful little cults into which they attempted to fit the science of medicine. Across these winding mazes—beginning in involved hypotheses, and ending in an interminable network of classifications and sub-divisions—Henle cut a bold new road, and the academic youth of Germany followed the pathfinder. They swarmed to his lectures, and the venerable members of the faculty found themselves neglected for the new favorite. Shortly after Henle's arrival in Heidelberg, an incident occurred which brought back the Zürich period. The night grew alive with light, and music blended with the upraised torches and then a student stepped forward and spoke:

We are assembled here this evening, that we may show a slight mark of our appreciation of one whom we esteem as a thinker and research-worker, whom we admire as a teacher, and whom we love as a man. As a discoverer, he struggles untiringly and indefatigably at the head of those who oppose the wretched empiricism of medicine. The frost which had covered our science has been broken by his efforts, and already the tree bears spring-blossoms for the cure of suffering humanity.

With pride, the German nation points to the astronomer Kepler, who through telescopic research guided us into the immeasurable starry infinite, and so has our teacher's microscopic research opened to us the organic infinite. We admire him I say, as a teacher, for he has presented to us the truth, simply and convincingly, free from the nimbus of exaggerated erudition. I repeat, we love him as a human being, for science did not extinguish in him the desire for the well-being of mankind and for the fatherland. From a full heart, let us call a thousand-voiced Hoch to this honored man.

Henle's answer, which has hailed with loud rejoicing, was simple and inspiring—a model of what such replies should be:

Gentlemen, I accept this unexpected mark of your appreciation with

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thankfulness and pride. I shall not say, as is so often done, that this honor is impersonal. I say, this is done to me personally. But what may be the reason for this appreciation? I believe it is nothing else but that I am one of you. Much rubbish is at hand, which we have to clear away. With united forces, we are endeavoring to do this. We are commilitants—truly a wonderful name. Comrades-in-arms are we, in the campaign in which we are going to make new discoveries. Let us call a Hoch to the comaraderie of our science and to our university.

The significance of this ovation lay in its spontaneity, for it was not Henle's birthday nor the anniversary of anything, and the whole celebration was the instinctive tribute of youth to a new leader. The Easter of 1845 witnessed an even stranger event: Henle utilized this vacation to call upon his publisher in Braunschweig, and upon his return, visited Leipzig, where Felix Mendelssohn invited him to dinner and music; next he turned toward Halle, where he had an appointment with some scientific friends, and let Henle relate what happened at Halle:

On the second evening, I was surprised by a serenade by a deputation of medical students; one of them made a beautiful speech and they cheered me, to which I replied from the window with the calm and self-possession of a man quite accustomed to such occurrences. The speaker said among other things that fault had been found with the medical men of Halle for following practice to the exclusion of theory—but they simply kept at a distance from the poor theories of the past. Now, however, that I constructed a new basis, founded upon physiology, they were just as zealous as any one to follow this path, etc., etc., My reply was not exactly beautiful, still it was fluent. I was somewhat embarrassed as Halle's professors were standing by, and had to witness this boosting of a stranger.

How frantically some men have worked to become a Hofrath, how ceaselessly they have schemed for it—and how easily it is thrust upon others who never coveted the aulic counselorship. When the Government of Baden conferred this distinction upon Henle and Pfeufer, the former wrote to his father:

You know what I think about this. I am not exactly overjoyed that I shall no longer hear my beautiful and well-earned Professor's title; under the present condition, however, and as we did not behave very tamely to the administration and did not take one single step to reach this honor, and as hardly a year has elapsed since our appointment, we have to acknowledge it a mark of recognition, which promises a certain influence for the future, and this is in no way desirable to our cringing colleagues. My chief regret is that I have no longer any right to tease Schoell. I spent a few enjoyable days in Halle, and was received by the students with a serenade there, which gave me more pleasure then the so-called favor of the lordships.

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The year of destiny, 1848, opened inauspiciously for Henle. His Elise lay on her death-bed, and on the twenty-first of February, death took her. Quiet had come to her, but the world was in revolution, and Heidelberg was the center of the cauldron. From the public turmoil which naturally agitated Henle, he could not escape to a home of peace and comfort; after the day's labor, no hearth awaited him where he could throw off his cares with his overcoat—eventful 1848 was the unhappiest year of his life.

As the weary months wore on, his sister Helene determined to come to his rescue. She had a friend named Marie Richter, the daughter of a Prussian army officer, and eloquently she sang Jacob's praises to Fräulein Marie. Fourteen months after his wife's decease, Henle visited his father and sister Helene at Coblenz, and there he met not only his relatives but was guided to the vicinity of Miss Richter—while Helene watched and waited. Her patience was not severely tried, for Helene's brother and Helene's choice fell in love with each other at once. Within a few days, the scientist proposed, and was eagerly accepted. Frau Mathieu now visited the girl and the letter of sister Marie is full of praise for sweetheart Marie, but it reveals also the writer's own nobility:

> As far as human insight goes, we can be pleased over this union, for Marie Richter possesses all the qualities from which we can expect that she will adorn the family hearth, and from the very first meeting with our brother she seemed to have become heartily attached to him, and affection is to him a life's necessity. She is a charming well-appearing girl, and will, according to all indications, be a good mother to his children.

Unlike poor Elise, Marie Richter was proficient in music. After an engagement of a few months, Henle and Marie were married, and they made the fairy-tale come true by living happily ever after. In due time, a merry daughter, Anna, was born to them, and she was followed by little Sophie. With children and honors and the pages of his Handbook of Rational Pathology periodically increasing, Henle seemed rooted to Heidelberg. Contentment reigned at his fireside, but with his colleagues he was at constant war. When Henle was a Heidelberg student, Chelius, Tiedemann, Naegele, and Puchelt were of the faculty: years later, on returning to Heidelberg as professor, Henle found the faculty unchanged. Science had marched on, but Tiedemann, Puchelt, the stately Chelius, and their confrères, still sat in their well-worn chairs,—untouched

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by the new era. Upon their doors the young generation knocked loudly, for the modern Dioscuri—as Henle and Pfeufer were called—had valiant hands. Henle's opinion of his venerable colleagues may be plainly seen in the following letter, brief but bristling with invective:

I am still somewhat strange here, and hope to remain so unless new elements appear. To feel at home among these boresome antique university-pigtails, would, as Pfeufer and I tell each other, be for us a degradation. Here nothing remains but to allow the old to die out, and to found a new colony. Both the government and the students seem to wish to help us as much as possible. The government, whose eyes have now been opened, is astonished how the faculty utilizes Heidelberg's reputation and its wonderful location, to fatten in comfortable calm and lock themselves in from intruders. Everything except the residences, country houses and vineyards belonging to the old gentlemen, is in a wretched condition. But the students are already beginning to see that something new, something capable of development, is offered them. They are full of enthusiasm for our rational medicine, and consequently enraged at the backwardness of affairs here.

Even Henle's friends have blamed him for the bitterness here displayed, but whether justifiable or not, the letter expresses Henle's attitude—and it did not soften with the passing years. The hostile relationship between the Henle-Pfeufer group and the elder members was further strained by a powerful series of unsigned articles in the recently-founded *Deutsche Zeitung*, praising the progressive elements in the university, such as Henle, Pfeufer, Vangerow, Jolly and Rau, and lashing the "reactionary periwigs." But though these articles were anonymous they were not the production of a nameless journalist, but of Georg Gottfried Gervinus. He was one of the famous seven who left the university of Göttingen when the king of Hanover tore up the constitution, and he became professor of history at Heidelberg in the same year that Henle was appointed professor of anatomy. Gervinus wrote the first satisfactory History of German Literature, and after a venture in practical politics—from which he soon retired in disgust—he devoted his time to the thesis that his favorite poet, Shakespeare, and his favorite musician, Handel, were very much alike intellectually, because of their common Teutonic origin.

As already indicated, it was the anatomist Tiedemann who had opened the gates of Heidelberg to Henle, but after their first personal contact, the elder man took no pride in his protege, and the younger felt he owed the other no gratitude. They represented different viewpoints, and between them there could be no sympathy. Oddly enough, it was a question

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of architecture that fanned Tiedemann's smouldering animosity into a wild paroxysm. The new Anatomical Institute was then nearing completion, and as its nominal director, Tiedemann gave certain orders for the furnishing of its interior —during the absence of his associate. Henle was an indefatigable worker, but he was so human that he went off on a vacation every time he had a holiday; upon his return, he criticized Tiedemann's plans, and was especially displeased with the arrangement of the auditorium, which he pronounced unserviceable. When leading architects confirmed Henle's statements, old Tiedemann's anger was uncontrollable: not only did he accuse Henle of a dastardly lie, but he shouted that his young colleague was a shameless Jew.

Tiedemann's shriek reached farther than he expected, for Zürich heard that Henle had resigned, and cordially offered him his chair again. Henle was undecided whether to accept, and it is interesting to note that at this period he was so adrift that he even contemplated emigration to America. But Heidelberg would not let Henle go: the ministry rebuked Tiedemann for his insult, demanded that he apologise in writing, and conveyed a hint to Henle that the director would soon retire. Henle's friends, such as Pfeufer, Gervinus, Vangerow and Jolly thereupon met in supreme council, and having decided that his honor had been sufficiently vindicated, they induced him to remain.

Fate practised its cruelest tricks upon Tiedemann's declining years; his adored son was one of the revolutionists of 1848, and when the wonderful year was dead and retrogression again assumed its ancient throne, the young man was court-martialed and shot. Then the old professor resigned from the university where he had become a tradition, and at last Henle's heart went out in sympathy toward his fallen antagonist.

But the same forces which murdered young Tiedemann, eventually drove Henle from the faculty. During the fifties, darkness held its carnival at Heidelberg, dispersing the liberal circles that had gathered there. For publishing an essay which was to serve as an introduction to his History of the Nineteenth Century, Gervinus was placed on trial for high treason. The proud man disdained to defend himself except to say, "This charge, though it appears directed against me, is really an accusation against History, which cannot be condemned." But the reactionary government of Baden was not afraid of

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History: it burnt Gervinus' pamphlet, and sentenced the writer to four months in prison.

When Heidelberg had become impossible, Pfeufer and Jolly accepted Munich's welcome invitation, and Henle responded to the call from Göttingen. After twelve years of constant association, Henle and Pfeufer were to part. "That we do not go together," wrote Henle to his sister, "pains us both, but I think I may say that our friendship has reached its zenith, and it is better that it should be forcibly rent asunder than that it should cool off." Even when moving day came, Henle did not experience the usual sadness of farewell, and his first Heidelberg letter was rounded out by his last:

> I depart, for the second time from a wonderful country, with the regret that it is not peopled with better men, and I shall gladly take in its stead some sand and meadows in order to be able to live among scientific colleagues and under a government to whom one does not become objectionable because of one's justified ambition for one's institution.

So the scientist left the wooded banks of the Neckar and turned to the North, but the stormy Heidelberg years were not barren, for Jacob Henle carried with him to Göttingen the completed copy of his great Handbook of Rational Pathology.

VII

THE CALL TO GÖTTINGEN

In the anatomical building of Göttingen's university—"the great university in the small town"—old Rudolf Wagner, conspicuous for his religious zeal and remembered for his discovery of the germinal spot, awaited the coming of Jacob Henle. Professor Wagner had feared this day, and long fought against it; it was his heart's desire to die teaching anatomy, but as his years advanced and his health declined, both colleagues and students insinuated, gently at first and later with increasing pressure, that he step aside; he prepared to withstand all his opponents, but a hemorrhage came to their aid, and the pious man humbly said, "Now that the living God has spoken, I must bow my head,"—and in submission he sent for Henle. After Wagner and Henle met, the latter, with his usual perspicacity, explained: "My position towards Wagner is similar to that I once held in relation to Tiedemann, with all its difficulties, except that Wagner is a much finer character, and fundamentally a good man. But it is asking too much that he stand by, and see how someone inherits from him, while he is still alive."

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The halo of spirituality which shown about Wagner, received a few crimps from Karl Vogt, but it shed its beams upon Henle, who was accordingly granted an interview with George V., the sightless king of Hanover. In those days, many letters passed between Göttingen and Munich, and Henle wrote to Pfeufer:

I have had the honor of dining with his majesty at Rotenkirchen. This is not so remarkable that you should be informed of it, but that this honor is due to my piety, will surely amuse you. The king received me with the statement that he felt it a necessity to inform me how much he congratulated himself upon the acquisition of a teacher whose reputation as a scientist was combined with that of a strictly Christian mind. The poor deluded man had, on his way through Heidelberg, received a visit from colleague Wagner, and apparently had some specific conversation with him, and then, because of my matter then pending in Heidelberg, he somehow connected me with this visit, and so I stood face to face with him as a brother in Christ in talar and a white neck-tie, in which you once, in your friendly partiality for my exterior, compared me with calf's head en tortue, and with a countenance which must have appeared still more strange, as my heroic efforts to set it into strict composure were lost upon the blind king and the entire work was done merely for the love of God.

I did not have the heart to spoil the king's joy, for he cannot get rid of me now; and when he began to reason about deists, I was able to assure him without hypocrisy, that I too did not believe much in deism, and when he expressed the conviction that a professor of anatomy could, in his lectures, do much for the propagation of religious faith, I made him very happy when I remarked that I always call my hearers' attention to the defects of human understanding, even in tangible things. If I talked a Guelfenorder on my neck or into my button-hole, you may rest assured that I shall put it on with a blush. His majesty immediately grasped the opportunity of informing himself regarding the utility of the blind gut, and we had arrived in this remarkable private audience as far as tapeworms, when the Hofmarschall announced that the soup was served.

In the fifties, pastorals could have been bred in Göttingen, for rusticity was its keynote. The same sylvan paths served for professors engrossed in meditation, and for cows intent on rumination. There was no railroad nor thriving industries, but every family kept a pig-pen whose dwellers spread the fame of Göttingen sausage. It is true, the principal streets of the town were lined with paving stones, but between their crevices the grass grew with sufficient luxuriance to satisfy herds of sheep. On his initial contact with this ruralness, Henle was appalled—it seemed incredible, after his active career, that he should pass the remainder of his days amid such provincial surroundings. As soon as he heard that Pfeufer was negotiating for him at Munich, Henle left his

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home half-furnished and wrote to his friend:

I would much rather use my energies in connection with yours, to build up Munich's university than work here in this retirement, for the preservation of a university which blinks melancholically backward upon the good old days. I long for the merriment of the South and the animated life of a large city, more so for the sake of my wife and my growing progeny than for myself, for I, at least, have beautiful memories to live upon.

Gradually the peace of the small town enveloped the spirit of Henle, and Pfeufer learnt that his Göttingen comrade began to lecture on special anatomy, "in that melancholic-trembling voice which you know so well," and the following bucolic was transmitted to Munich:

I find myself in the cleanest and richest of anatomical professorships imaginable. To use the classroom expression, I am "surrounded by all the integral stimuli" which a man and a professor requires in life—only the vexatious and the exciting ones are lacking. We have time, money, devout pupils, and complete teaching apparatus. The colleagues are nothing but open encyclopedias. All are as virtuous and as industrious as I hope to become, because there is no opportunity for anything else.

The city lodges many students and their teachers; it also harbors the necessary bootblack, a cobbler, a tailor, an inn-keeper, and a burgomaster and four gendarmes who govern these citizens. At the stroke of the hour when the lecture is over, it is somewhat livelier in the streets; at twelve it is noisy, because besides the home-returning men, the streets swarm with maid-servants with baskets filled with berries and prunes. Carriage wheels are heard only when there is a ball, or when a professor is being buried. At four o'clock everything rushes on the Wall, and runs once or twice around the town, after the fashion of hemorrhoids, more or less completely blind.

I have already found a student who plays the violin; as I wished to form a trio and needed a C string for my violincello, I inquired at the store and found that the store-keeper permitted the article to run out, because for two years there had been no demand for it. She would, however, have one spun for me. When it was ready, I had to have the opening in the tail-piece of my instrument made larger, because the string would not go through.

In public and social life, much has been retained to remind one of the town's former connection with England. There is much more civic freedom here than anywhere else in Germany; restrictions of hats, books, collections, etc., woud be just as impossible here as in England. We know nothing of either the religious or political faith of our neighbors. But aside from independence in vital matters, there is to be found the English sameness in non-essentials; the unalterable roast at dinner and a certain stability in food and drink, which in spite of the hospitality of the host and the merriment of the guest, would bring people of your sensitive taste to despair. Every Sunday we meet the same valet de place, who tells us in advance where we shall dine together the forthcoming Sunday, and everywhere are to be found the culinary products of the same cook.

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Henle sealed his contentment with Göttingen by buying a home, situated directly on the promenade which led around the town, shaded by magnificent lindens, and enriched with a garden of rare plants and old trees. The house had formerly been Langenbeck's private hospital, and the walls which once saw the master surgeon amputate a shoulder while you took a pinch of snuff, now witnessed happier scenes. If an academy, a library, an opera and a dramatic troupe had arrived in Göttingen, all at once, they could not have aroused the town more than did Henle's advent. He formed his colleagues into a Friday Night Club, and was its animating spirit, but intercommunion with fellow professors never sufficed for Henle; gathering groups of students and young privat docents around him, Henle organized musical and theatrical circles. His home became the headquarters of visiting artists, and his position as director of the museum enabled him to utilize the museum's hall for concerts. Renowned men and women participated in Henle's musical evenings: here were heard Joachim's violin, and the mezzo soprano of Amalie Weiss.

Among Henle's new professional friends was the dermatologist, Conrad Heinrich Fuchs. "I begin to feel," wrote Henle to Pfeufer, "a great attachment to Fuchs, because of the pleasant recollections which his doubtful hard 'b' awakens in me, and also for his kind nature and modest manner, in which there is nothing to remind one of the pretentious Systems of Skin Diseases." The point of this note is that Pfeufer and Fuchs were natives of Bamberg, and therefore found it difficult to pronounce the alphabet's second letter; moreover, Fuchs was an adherent of the so-called Natural History School, and he proved it in his once-famous book on diseases of the skin, for while it contains many valuable observations on etiology and diagnosis, and even on therapeutics, the effect is marred by its incomprehensible nosological arrangement. Had Fuchs not made the slightest attempt at classification, instead of devoting his chief energies to it, the result would have been less bewildering.

Another friend was the obstetrician, Eduard Caspar Siebold, a member of what Lorenz Oken called the "Asclepiad family of Siebolds." He is now remembered for his classical history of midwifery. Siebold was a singer, and played the kettle-drum and tymbals with unusual skill—and Henle did not permit him to neglect these instruments. Henle asserted that

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at the very first tone, he could tell whether Siebold or an ordinary drummer was playing.

Then there was Friedrich Wöhler, who was certainly worth knowing. He graduated in medicine and surgery at Heidelberg, and intended to become a practitioner, but he had already worked in the laboratory of Leopold Gmelin, and was persuaded by him to devote his life to chemistry. Gmelin discovered potassium ferricyanide but Wöhler may be regarded as Gmelin's chief contribution to science. The young Wöhler went to Stockholm to study under the great Berzelius, and in later years, along with original researches, he translated his teacher's work from the Swedish. His friendship with Berzelius was matched by his lifelong relationship with Liebig, with whom he was associated in many important researches. Wöhler taught for brief periods in Berlin and in Cassel, but for almost half a century he held the chair of chemistry in the medical faculty at Göttingen. Wöhler was the man who broke down the barrier between organic and inorganic chemistry by constructing an organic substance out of its inorganic constituents—and thus the vital force theory received its death-blow. It was granted to Wöhler to make another discovery of permanent importance: just as his synthesis of urea marked the beginning of modern organic chemistry, so his demonstration that benzoic acid taken into the body reappears in the urine as hippuric acid, opened the modern era of the chemistry of metabolism. Wöhler was equally interested in analysis and among the elements he isolated were aluminium, beryllium and yttrium.

In the spring of 1858, the sons of science went into mourning, for the father of scientific medicine in Germany bade them the last farewell. No longer would his voice be heard in the lecture-room, nor his guiding hand felt in the laboratory. His pupils remained—Schwann was at Liège, Henle at Göttingen, Kölliker at Würzburg, Brücke and Ludwig at Vienna, Wilhelm His at Basel, Virchow at Berlin—but their teacher had left them. Johannes Müller was dead, but the work must go on, and mighty Berlin turned its eyes towards the town of Göttingen, where now dwelt Germany's greatest anatomist, Jacob Henle. The times had changed, for the city which had thrust the youth into prison, invited the man to enter its university as Johannes Müller's successor. When Pfeufer read in the newspapers that Henle had received the offer from

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Berlin, his emotions were on edge, and he immediately wrote to Henle asking him if he intended to accept, and assuring him that though he might conclude his life with more contentment in Göttingen, yet it was certain that he belonged in Berlin. Without delay, Henle replied to his most intimate friend:

It is true I received an offer from Berlin, as brilliant as possible, purely for anatomy, with a to-be-newly-constructed building, with a prosector of my own choice, with a seat in the faculty and at the state examinations—and I have rejected it. Not without a great mental struggle; but on what solid basis my final decision was founded was proven to me when I read your letter, which in spite of the fact that I have always valued you as an authority in practical matters, could not shake my peace of mind. How much I would have liked to have gone for advice to my old friend! The matter was left entirely to me, as not even my wife would give a sign of what preference she felt, and the Berlin Geheimrath who unexpectedly crashed in on me with this offer like a bomb, insisted on coming back for my answer on the following day, and could only be persuaded to depart when I gave him my assurance that I would forward my decision within forty-eight hours.

You may voice your objections that I permitted myself to be so hurried. I however, wished that the Prussians should not lose more time than necessary, as I felt from the outset that their efforts to get me would be unsuccessful. I am greatly attached to Göttingen; I felt at home here from the first moment; every change that has occurred has made my position more comfortable; and I can surely count upon it that it will be the same in the future, and that in any matter concerning the university I shall have a decisive voice. I contemplated Müller's position without the slightest envy, while he, on the other hand, called my position a more enviable one. Why should then, the accident of his untimely death give me an incentive to see if I could not have things better than I already have them?

The great city and its manifold contacts do not possess the same attraction for me as they do for you; it is probably the result of my provincial origin that the bustle of strange and stiff people makes an unpleasant impression upon me, and that I find more comfort in the quietude in which our life flows on here, under the shadow of our trees and among a few everyday friends. Besides, you must not draw a parallel between Berlin and Munich, and between Göttingen and any other small town. For Munich has, besides all the agreeableness of a large city, still many congenial rural elements, which Berlin lacks, and Göttingen is more a country seat for a number of professors and students than a small town. If we gradually appropriate *das Geschmaeckle* of which you speak, we do not notice it upon each other, and if it is apparent to our friends from large cities, whom we unfortunately meet but seldom and but for a few days we must hope that they like us well enough to put up with it.

If I felt some of that self-confidence, with which I would have gone into Parliament in 1848, if my leg had permitted me to stand up at the time, I would consider it my duty to become the citizen of a state, which after all, is the dominant factor in German affairs. But I have not yet

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forgotten, how at the time, it was not my wit, but merely my misfortune, that saved me from compromising myself. That I can bring up my children here physically stronger and mentally less blasé than would be the case in Berlin, I know for certain. And for me the reflection over going or remaining was merely a struggle between inclination and duty. Whether it was right for me to withdraw myself from such an important and influential post, with great resources, and participate in the list of a tournament to which I was called, I shall have to justify myself before my conscience and my friends whose eyes are focussed upon me.

How alone I would have stood! Was it not characteristic that not the slightest hint, not a friendly word of persuasion from the lap of the faculty, or from other friends, preceded the arrival of the Berlin mediator? Could I be indifferent to the fact that since leaving Berlin, I received not the slightest mark of distinction from the medical societies that spring up there, and that the Berlin Academy purposely avoids me? Though I am not in the habit of imagining things, still it seemed to me quite clear that I made myself unavoidable through my book, and that I was proposed and expected as the inevitable one. And Fr. who was supposed to have dished out the gravy, belongs to those who will not forgive me because I did not wait for the physicians to clean out the pathological stall. . .

Could I, without flattering myself, hope to exercise influence upon the course of studies in Prussia? Dear friend, we both know that we, with united forces and in younger and more spirited years, were unsuccessful with the subdual of a less tough dough. A man of Müller's importance had difficulty enough, and had to, often play his highest trump to remain unattacked in his own field. This is, and we have often acknowledged it, not my terrain, and a man of fifty years should not deceive himself into imagining that through transplantation into a new soil, he can acquire new qualities. I live chiefly to please myself, and believe myself to be useful to others if I give to the world the results of my quiet musing.

To satisfy this passion, there is no place more suitable than Göttingen. Were I to go to Berlin, I would have interrupted my work for a few years, first because of the removal and then because of the work incidental to the building up of a new collection. How terribly Müller had often sighed over the burden of the state examinations, which took up, year in and year out, so much of his time. Forgive this long exposition. But as you do not know either Göttingen or Berlin in their modern phases, the matter could not be explained briefly. Verbally, I could even say much more. Could you but glance into our activities! You would not wish to live here, but you would understand why others feel themselves so attached.

Until he came to Göttingen, Henle was a peripatetic: six years he was Müller's prosector in Berlin, four years professor in Zürich, and for eight years professor in Heidelberg—but for the remaining thirty-three years of his life he was settled. It was Reichert who went to Berlin as Müller's anatomical heir. Henle remained in Göttingen, cultivated his garden, paid the mortgage on his house, and worked on his masterpiece, The Handbook of Systematic Anatomy.

(*To be continued*)

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Medical News

Another Noguchi Triumph

Walter Reed has lain in his grave for twenty years, but his work goes marching on. Mr. George E. Vincent, the President of the Rockefeller Foundation, authorizes the publication of the statement that the discovery by Dr. Hideyo Noguchi, at the Rockefeller Institute for Medical Research, of a vaccine for yellow fever, introduces a new factor in yellow fever control through the possibility of making persons immune to yellow fever by vaccination.

Heretofore, work in yellow fever control has been entirely that of prevention of infection by controlling breeding places of the mosquito which carried the yellow fever germ. The isolation of the yellow fever organism, however, has made it possible for Dr. Noguchi to develop a serum which it is believed will reduce the mortality from yellow fever and a vaccine which gives promise of protecting the non-immunes against contracting the disease.

Already vaccination against yellow fever of people going to tropical countries is being made in New York. This work is being done at the Broad Street Hospital with vaccine furnished by the Rockefeller Institute.

The first shipment of vaccine for yellow fever from the Rockefeller Institute to tropical countries was made a year ago when three hundred bottles were sent to Mexico. Other shipments have been made since then, the latest on November 10th. All vaccine supplied to Mexico is sent to the Mexican Department of Health which arranges for its distribution.

The Central American Countries are so well convinced of the efficacy of Dr. Noguchi's vaccine that they are permitting travel without quarantine detention of those who have been successfully vaccinated.

The New York *Sun*, of December 13th, in commenting on Noguchi's discovery, writes:

> **Thus has the Rockefeller Institute for Medical Research again demonstrated its ability to serve the human race. In this day of strife, when so often nation is arrayed against nation, race against race, it is pleasing to reflect that there exists a great organization whose sole purpose it is to combat the enemies of all.**

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Noble words! but with what poor grace do they come from a conspicuous representative of what *The Athenæum* terms the Gutter Press—the press, which more than any other single agency, has stirred up international strife.

The Mosquito in the Movies

That genuine villain, the *Anopheles maculipennis*, has invaded the shadow world. A new motion picture film prepared at the instance of the United States Public Health Service vividly represents the life history of this man-killing mosquito. Part of the film is "animated" and part taken from actual life; all of it is lifelike.

Most realistic are the views showing how the female mosquito absorbs the malaria germs with the blood of a malaria patient; how the germs increase and multiply and pervade the salivary glands of the mosquito; and how the mosquito passes them on to the nearest innocent bystander, who promptly falls ill with the disease.

Born in a Pigeonhole

The small beginnings of great things are always piquant. The origin of the Yale University Press—which is of some interest to us because medical publications are included in its list—has recently been "told by a friend," who says that the first quarters of the new Press were a pigeonhole in a busy man's desk, and this desk was in a busy office downtown in New York: one that had nothing to do with books except account-books, and grudged the Press even a pigeonhole. So the Press moved after a while to a building near Washington Square. There it had a whole room. It was only a little black cave of a room, but it was a great advance on one pigeonhole. The busy man who had started the Press couldn't go up there often; he had to stay down in his office: but one of his family went and sat there. And she kept a record of all the Press's work, in a ridiculous book, four by seven, with a thin cover that looked like butchers' paper. This was the cashbook, ledger, order-book, shipping-book, and general record, combined. She rushed down each morning to see if the postman had shoved any mail through the slot in the door; and when some of it was orders she had to telephone downtown at once to announce them, because orders make you happy when you are starting a publishing business. One morning there was a splendid order for thirty-one books, and it took her all day to get them tied up and sent off and billed for.

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Thyroid Transformation

Thyroid feeding, which astonished us by its ability to bring cretins to the borderland of normality, is performing new miracles. The London correspondent of the Journal of the American Medical Association writes that the occasional change of a Mexican axolotl, a purely aquatic newt breathing by gills, into the ambystoma, a terrestrial salamander, with spotted skin, breathing by lungs, has long been known. The animal usually breeds in the axolotl stage and misses out the final stage in its life history. By placing it on damp moss for an increasing time every day, the final transformation has been artificially induced.

More recently the discovery has been made that feeding the axolotl on thyroid gland produces the metamorphosis very quickly, even if the axolotl is kept in water. In the reptile house at the Zoological Gardens, full-grown examples of the common black axolotl and the pretty white variety are exhibited. Some are nearly three inches long. Alongside are shown several examples of the ambystoma stage, produced in the laboratory of the Oxford University and at the gardens by thyroid feeding. These are all of the white variety. These ambystomas are much paler than the normal form, but are spotted to a certain extent. What is more remarkable is their very small size. When the metamorphosis is produced by other methods, or occurs spontaneously, the change takes place in well grown axolotls. Thyroid gland has the same effect on axolotls a little more than an inch long.

Medical Journals Wanted

In the nineteenth century American Medicine was so crude, standing with its hat in its hand in the presence of European Medicine, that there is still a sense of strangeness in European Medicine's appeals to us for succor. To assist the medical schools of Central Europe, The Rockefeller Foundation announce a cooperative program covering the following points:

Aid in the rehabilitation of scientific equipment for medical teaching and research.

Aid in furnishing medical journals to universities throughout Europe.

An invitation to the authorities of Belgrade University Medical School to study medical education in America and England, as guests of the Foundation.

As the United States is well supplied with medical periodicals, we have no sentiment regarding them, but it is interesting to note that one of Europe's crying needs is for journals which in this country often remain in their wrappers.

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Colonel F. F. Russell, who has been in Prague since August serving as technical advisor in public health laboratory organization to the Czech Ministry of Hygiene, will arrange the details of the Foundation's co-operation with the medical schools.

These activities of the Rockefeller Foundation in Central Europe are the result of investigations made there recently by representatives of the Foundation. The following extract from a report submitted to the Foundation by one of its officers sent to Europe to make a special inquiry into their needs, gives some idea of conditions in Central Europe with respect to medical education:

> Decisions of far-reaching significance in the matter of medical school support, the training of nurses, the care of the sick and the prevention of disease must be made in these countries within the next few years. Expert guidance and some assistance in starting sound programs now may mean much for generations to come.
>
> Medical schools of high rank and of long standing exist in the following cities of Central Europe: Vienna, Gratz, Budapest, Prague, Cracow. Other schools of importance are at Warsaw and Lemberg in Poland, at Innsbruck in Austria, at Zagreb (or Agram) in the Croatian state of Jugo-Slavia.
>
> This comparatively small number of medical schools serves a total population of approximately seventy-five million people. With the single exception of Austria, all of the countries of the region under consideration suffer from a great shortage of physicians.
>
> There are reported to be less than 300 doctors in all Serbia. Outside of the Army medical forces, less than 2,000 physicians are available to care for the twenty-five million inhabitants of Poland. Additional schools are needed adequately to serve these countries, particularly those of the south and east.
>
> There is a five year interruption of medical training in Europe which will affect the supply of physicians available during the coming generation. The instruction of adequate numbers of physicians for the years immediately ahead is essential.

In all of the universities of Central Europe the equipment (glassware, rubber, chemicals and apparatus usually replenished year by year) has been very largely used up during the four years of the war and the two years of disorganized conditions and low exchange which have followed the armistice.

The situation in Germany is somewhat different and that country is adequately supplied with medical schools and much scientific apparatus is manufactured in Germany.

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The greatest desire for American and British medical journals was expressed at every university visited. The journals are supplied on an arrangement whereby the university concerned pays in its national currency at the pre-war rates of exchange, the Foundation making up the difference due to loss in exchange.

The Secretary arranged personally for the supply of journals to the following universities—Vienna, Budapest, Zagreb, Prague, Cracow, Lemberg, Warsaw.

It is proposed to extend the services to Gratz, Innsbruck and Bucharest, in Central Europe, and to some thirty of the principal centers in France, Belgium, Italy and Germany.

With the idea that Belgrade is one of the strategic points in a world program in which a medical school must be established in the near future, it has been decided to invite a group of four of the men responsible for its development to make a visit to America for study and inspection.

It has also been decided that further assistance will be given by lending a technical adviser in the organization of medical education and that the Belgrade officials will be authorized to recommend to the Foundation from time to time as candidates for fellowships in specialized post-graduate medical study, persons who may be under appointment or consideration for the faculty of the proposed school in Belgrade.

Saving Cerebration

In Scranton, Pennsylvania, is published "The Chamber of Commerce and Board of Trade Journal." A paper of this character is usually dignified, but when that Scranton office thinks of our irrational system of weights and measures, its editorial dignity succumbs to indignation. For example, here is the concluding paragraph of what the executive secretary of the World Metric Standardization Council pronounces an "admirable editorial:"

> How few can tell off-hand how many cubic feet or inches in a peck, a bushel, or how many pounds in a cubic foot of water? How many college graduates can tell you? Recently when an engineer testified in court that a cubic foot of anthracite weighed fifty-four pounds not a single judge or lawyer questioned the accuracy of the statement until a miner in the audience said in a stage whisper: "He's thinkin' av Ivory Soap!" Yet a French school boy will convert liters and decimeters into grams at your will. Oh, the brutal waste of the life of holy childhood in learning these endless tables designed by madmen dead and damned!

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Topics in Tabloid

The Granny-Doctor

Thousands of the untaught people cling to the word of the ancient granny, valuing her opinions much beyond those of a Holt, a Flexner, a Mayo, or any other medical authority. The ancient grannies whom I have known and know are all honest people giving the best advice they know. They love people and desire to do whatever they can to help people; but of matters pertaining to the newer treatment of diseases and accidents they are just not informed.

JOHN F. SMITH, *The Survey.*

Health Insurance

The most staggering blow to the efficiency of the healing art as well as the greatest humiliation to the medical profession that the present and last centuries have administered, have been the Compulsory Health Insurance Acts which fell like a blight on some European countries, especially Great Britain and Germany. It is a species of socialism that discriminates against those who attempt to guard the health and lives of the people.

W. F. GRINSTEAD, *Illinois Medical Journal.*

The Antiquackery Monthly

A small monthly is published at Amsterdam, now in its fortieth year, which is devoted to the exposure of quackery of all kinds. The subscription price is 1.25 florins per year, and the address of the secretary is Dr. W. Binnendijk, Marnixstraat 182, Amsterdam. The latest issue reports the annual meeting of the Antiquackery Society, and the recent sentencing to two months' imprisonment of the quack Eilers. Members of the society send in queries and information about quacks, the correspondence department filling considerable space. Any one making a contribution of 3 florins to the work is entitled to membership.

Journal American Medical Association.

Protein Food and Blood Pressure

Protein food has generally been regarded as having a definite influence on blood-pressure. A diet high in proteins has been supposed to raise blood-pressure, and vice versa. This principle has been widely applied in all diseases associated with hypertension, and, as a rule, a diet low in proteins, especially in meats, has been prescribed for patients exhibiting an increased arterial pressure. It is disappointing to note on what very meagre evidence the above ideas are based.

HERMAN O. MOSENTHAL, *American Journal of the Medical Sciences.*

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Weigh Your Neurasthenics

The scales are practically indispensable in studying such conditions as pyloric obstruction, suspected malignancy, and chronic diarrhea, for example. Ofttimes nothing is so effective in combating the hypochondriasis of a neurasthenic as the objective demonstration of a half pound gain in weight since the last visit.

JOHN L. KANTOR, *Medical Record.*

The Last Chapter of Yellow Fever

Guayaquil, the chief seed-bed of yellow fever, has been free from the disease for months. The public has proclaimed its deliverance from a menace which had never been absent since 1842. General Gorgas's ambition to write "The Last Chapter of Yellow Fever" seems no Utopian dream.

GEORGE E. VINCENT, *The Rockefeller Foundation Annual Report.*

The Physician As Patient

The anesthetist, the world over, recognizes that the doctor is the hardest patient he is asked to put to sleep. A doctor's fear of the ordeal is ofttimes beyond all reason when one realizes that he knows the chances of an accident in figures better than anyone else. He will travel farther and make more fuss to get into the hands of an anesthetist in whom he has confidence than he will to get to his favorite surgeon.

RALPH M. WATERS, *Journal Iowa State Medical Society.*

An Intolerable Situation

The present situation, which permits the state to issue a marriage license to a person known by the state board of health to have a venereal disease, is so intolerable that it cannot long continue. It is amazing that even tradition can veil the gravity of this offense against the public. The marriage of an infected person with one uncontaminated may entail sterility, death or mutilation, and impose upon unborn children blindness, syphilis, or annihilation.

EDITH HOUGHTON HOOKER, *Social Hygiene.*

Focal Infections in Urology

In that first paper I reported six cases of chronic urethritis which I considered due to tonsilitis and two cases of ureteral stricture which seemed to have a like origin. I hope some day to report the many cases of chronic urethritis and chronic trigonitis which have come under my care, and be able to show the large proportion which have cleared up only after the removal of some distant focus of infection.

GUY L. HUNNER, *Urologic and Cutaneous Review.*

Christian Science and Jewish Followers

To be a Christian scientist one must be a Christian first, a firm believer in the Master Jesus, and a steadfast follower of Mrs. Eddy. I can appreciate the mind of a Jewish agnostic, a Jewish atheist, but the state of mind of a Jewish Christian scientist will bear no rational analysis.

AARON BRAV, *Medical Review of Reviews.*

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Sexology

Continuing the
AMERICAN JOURNAL OF UROLOGY AND SEXOLOGY

A LANDMARK IN THE VENEREAL DISEASE CAMPAIGN

By William J. Fielding

Author of "Sanity In Sex"

During the week of December 6-11, there was held in Washington, D. C., the All-America Conference on Venereal Diseases, which promises to rank among the milestones in the international Venereal Disease Campaign.

In a way, it is reminiscent of those historic Conferences in Brussels, in 1902 and 1904, which did so much to stimulate the activities of educational propaganda in many lands. These earlier conferences, while not startling in their actual deliberations, nor sensational in their immediate results, nevertheless had an epoch-making significance. They represented the first important internationally organized effort to deal with the most serious of all the physical-social problems with which modern society had, and still has, to contend.

In its present critical phase, as an aftermath of the war, it is inseparably bound up with the question of poverty and famine which threaten the greater part of Europe. Indeed, from all accounts, no small part of continental Europe is more than threatened—it already lies prostrate under the cruel, remorseless hand of starvation. It is thorough-going and all-pervading: starvation of the body, of the soul; paralysis of commerce and industry; and the crucifixion of hope for millions. In such an environment, sex-life and love perishes or corrodes before the slowly disintegrating body does, and venereal diseases rank high in the pathological toll.

The single American delegate to the Brussels Conferences, Dr. Prince A. Morrow, received renewed inspiration to do battle with the intrenched forces of ignorance and prudery, and the remainder of his life was devoted to this cause. His years of courageous and conscientious effort are imperishably ingrained in the foundation of the American sex educational movement. The superstructure has barely begun. It is the work of a few thousand devoted enthusiasts, and its continuance offers a golden opportunity

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—not in pecuniary reward, but in rich human service—to millions of men and women. There is a clarion note sounded for a duty that no one with a social conscience can ignore. To none does it more rightly call, or challenge, than the medical profession. And the response is becoming more and more in evidence.

In April, 1919, a general conference on world problems of health conservation was held under the auspices of the League of Red Cross Societies Committee at Cannes, France. Delegates were present from five nations—England, France, Italy, Japan and the United States. It was agreed at this conference that the fight on the venereal diseases was one of the vital problems of the age. And it was recommended that regional conferences be held in various parts of the world to further the organization of practical methods and plans for carrying out the measures approved.

The recent All-America Conference was the first of these regional conferences and was limited to the venereal diseases as the most urgent of the disease-prevention campaigns to be promoted by the plans formulated.

This Conference represents another great landmark in the movement to apply rational remedies to a menacing situation. As the name implies, it pertains particularly to the Western Hemisphere, although there was present a representative from England, Sir Arthur Newsholme.

Among the North and South American countries represented, besides a large delegation from various parts of the United States and insular possessions, were Canada, Cuba, Mexico, Argentina, Brazil, Chile and Paraguay.

Following the plan agreed upon for all the conferences, this one was unofficial in character, but nevertheless officially recognized, having been called under the auspices of the United States Interdepartmental Social Hygiene Board, the United States Public Health Service, the American Social Hygiene Association, and the American Red Cross, with the co-operation of equivalent federal and volunteer agencies in other countries of the American Hemisphere. Official recognition of the importance and timeliness of the Conference was obtained through the exchange of diplomatic notes between the respective governments of the countries that participated.

The expenses of the Conference were met by appropriations of funds from the American Red Cross and the American Social

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Hygiene Association. It was the purpose of the Conference to review past efforts and activities in the organized fight on venereal diseases, and to formulate plans for future work in this field.

The questions generally discussed came under the following twelve classifications:

1. Medical research and laboratory questions.
2. Syphilis: diagnosis and treatment.
3. Gonorrhea in the male.
4. Gonorrhea in the female.
5. Public health administrative questions.
6. Clinic and hospital questions.
7. Statistics.
8. Public information and educational questions.
9. Law enforcement measures.
10. Protective social measures.
11. Psychological and psychiatric questions.
12. Miscellaneous questions.

Of special interest to the medical profession are the topics which came up under the head of medical problems:

1. To what extent should the Wassermann test be relied upon as evidence of syphilis in the absence of clinical symptoms?
2. Is neosalvarsan as effective as salvarsan in the treatment of syphilis?
3. Is arsphenamine equalled in the treatment of syphilis by other arsenicals now being used?
4. What is vulvo-vaginitis in infants? How does it arise? How should the condition be dealt with?
5. Are the common methods of treating gonorrhea in the female effective?
6. Is it possible to immunize against syphilis or gonorrhea?
7. Is it possible to determine statistically with a tolerable approximation, the effect of syphilis and gonorrhea on the general death rate?
8. Is is feasible to secure accurate certification of venereal diseases on death certificates?
9. Has the internal administration of mercury a proper place in the treatment of syphilis?
10. Should acute infectious cases of venereal diseases be admitted to general hospitals? If so, what special facilities, if any, do they require?
11. Is gonorrhea curable? Is it commonly a self-limited disease? What criteria should be used in determining whether a cure has been effected?
12. How should the Wassermann test be used in dealing with syphilis?

A few among those prominent in the world of medical and sociological achievement who participated in the deliberations of the Conference, are:

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Jane Addams, Maurice A. Bigelow, Hermann Biggs, William C. Braisted, Hugh S. Cumming, Katharine B. Davis, M. J. Exner, Livingston Farrand, Abraham Flexner, John A. Fordyce, Raymond B. Fosdick, Merritt W. Ireland, Bascom Johnson, Edward L. Keyes, Jr., W. W. R. May, Harry H. Moore, Sir Arthur Newsholme, Valeria H. Parker, Roscoe Pound, C. C. Pierce, John D. Rockefeller, Jr., William F. Snow, John H. Stokes, Thomas A. Storey, Edward L. Thorndike, William H. Welch, William A. White, Mina C. Van Winkle, Edward B. Vedder, Rachelle S. Yarros, Hans Zinsser, etc.

It is hoped and may reasonably be expected that the prestige lent to the Anti-Venereal Disease Campaign by the many eminent delegates to the Conference from all over the Unitd States and from several other of the Americas, will give a vigorous impetus to this movement. With the preliminary ground broken, the way is now prepared for great strides in inculcating a more rational and healthy public outlook on the sex question generally, and for a more thorough-going and scientific handling of the venereal diseases in particular.

Newark, N. J.

IS ABORTION BECOMING ETHICAL?

An Answer to Herman Dekker's Article in Medical Life

By Alfred W. Herzog, Ph.B., A.M., M.D., Counsellor-at-Law

Herman Dekker's article, entitled: "Is abortion becoming ethical?", which appeared in the November issue of MEDICAL LIFE, deserves an answer, because it is exceedingly well written, and needs an answer for the same reason, as, being well written, by its subtle suggestiveness it erases the question mark in the title, thus making the title of the article read: "Abortion is becoming ethical," and the article itself a defense for illegal abortion and excellent propaganda for legalized abortion.

To answer Mr. Dekker's article, it is necessary to study and dissect it carefully and to cut out from the argument all statements, which, while they may be true, and all reasoning, which while it may be logical,—yet have nothing to do with the question of the paper and which, if not culled out, only would prevent a clear analysis.

Passing over Mr. Dekker's introduction, we find the following:

"At least so much of an explanation is essential, if my argument, that abortion in the United States is regarded (tacitly, of

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course) as at the worst, ethically neutral and not wrong, is to be understood at all."

"The human origin of ethical codes, growing out of diverse associational needs, under various environmental conditions, physical and social, is my fundamental proposition."

"The emphasis is upon the social nature of morality and ethics."

"Philosophy and organized religion do not create ethical codes, but adopt them and sometimes schematically formulate them."

Before answering Mr. Dekker's somewhat rhetorical question, I must submit, that as Mr. Dekker has taken the affirmative in the argument, the burden of proof lies with him and it will not be necessary for me to bring proof that abortion is not considered ethical or becoming ethical, but only that Mr. Dekker has failed to sustain the affirmative by sufficient proof.

May I then first of all draw attention to Mr. Dekker's: "(tacitly, of course)" as contained in the prior quotation.—

Why the "tacitly, of course?"

If abortion is becoming ethical,—if "at the worst" "it is considered ethically neutral and not wrong,"—then at the best, or under any other circumstance, but "at the worst," it must be considered as ethically right.—

Then, if so, why the "tacitly" and why the "of course?"

The second part of the quotation from Mr. Dekker's article that: "The human origin of ethical codes, growing out of diverse associational needs, under various environmental conditions, physical and social, is my fundamental proposition. The emphasis is upon the social nature of morality and ethics. Philosophy and organized religion do not create ethical codes but adopt them and sometime schematically formulate them"—needs also to be discussed, because, while the human origin of ethical codes may be admitted, Mr. Dekker's statement that philosophy and organized religion do not create ethical codes, allows it to be inferred that philosophy and organized religion are superhuman or extrahuman agencies, which they decidedly are not.

People may agree with Mr. Dekker as to the human origin of ethical codes and still disagree with him in his conclusions, and consider them based on premises utterly false and highly dangerous.

The question revolves on what is ethics and whether the fact of tolerance of an evil makes it or tends to make it ethical.

I contend that organized religion and philosophy both formu-

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late codes of ethics and that it is not the masses of the people who do so.

I contend that the thinking part of the population, the reasoning part of the populace, tend to follow the arguments of philosophers and logicians, who try to appeal to reason, while the common herd, the credulous masses, tend to obey the commands of organized religion, taking from their priests dictates as to what is right and what is wrong.

The fact that a certain thing may be convenient, the fact that notwithstanding the evolution of society from barbarism to civilization, man will from time to time relapse to barbarism and will not obey the ethical laws evolved by society, as propounded and formulated by philosophy and organized religion, but rather consistently overstep them, does in itself not prove that the the overstepping of these laws is becoming ethical, but only that notwithstanding the teachings of philosophy and organized religion it is difficult for philosophers and theologians to lift the flesh of humankind unto that height, on which higher human intelligence feels that it ought to rest in harmony with higher human mind and intelligence.

It is not a question here for me to answer whether birth-control be right, whether abortion be right, nor whether infanticide be right;—nor, and I agree here with Mr. Dekker, would it make the slightest difference whether, if Mr. Dekker should succeed in establishing the fact of the ethical standing of abortion in the United States, he would thereby also prove that infanticide has ethical standing; for, if an argument be right and logical, it does not matter where it would lead us, no matter if it be infanticide or Leavenworth.

Mr. Dekker denies that infanticide and abortion are similar. I think that Mr. Dekker is wrong in this, and am ready at some future time to debate the question with him; still this question has nothing to do with the subject under discussion, which is, whether abortion is becoming ethical or not, and if discussed here and now, would only tend to cloud the issue.

Here is however a quotation from Mr. Dekker's argument, which is to the point: "The moral motions (resentment and approval) aroused by conduct fundamentally determine the ethics, that is, the theoretical justification of the mode of behavior."

Let me then return to a prior quotation from Mr. Dekker, that abortion in the United States is regarded tacitly as at the worst ethically neutral and not wrong.

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I take it from that, that Mr. Dekker means that the practice of abortion does not cause any resentment even though it does not cause approval.

Let me then, by a method of reductio ad absurdum, show where Mr. Dekker's argument will lead us to:

Abortion does among the masses not cause any resentment; it is therefore ethical.

Substitute now for the word "abortion" in the above sentence the following words: Prostitution, adultery, fornication, grafting, squandering public funds, mis-statements by public officials, misleading of the people by the administration of the government in Washington, cheating at elections, etc.

Now we get the following: Prostitution does among the masses not cause any resentment, it is therefore ethical.

Adultery does among the masses not cause any resentment, it is therefore ethical. And so forth, ad infinitum.

Mr. Dekker says that ethics, philosophy and religion adapt themselves to the new conditions of life and declare the standards of this millenium, of this era, as the only ones true and good.

This I deny.

I admit that some mental and moral weaklings, who may occupy chairs of philosophy in colleges in the United States and some who may preach from pulpits, may in time of stress, in time of public hysteria, become hysterical with the crowd and even ahead of the crowd, but I deny that these are either pholosophers or theologians.

For thousands of years man has been supposed to live in monogamic marriage. For as long a time he has oversteped the sexual laws, and society has tacitly overlooked and condoned his sexual lapses, admitting that the mind is willing but the flesh is weak—and still adultery and fornication even to this day have failed to become ethical.

The fact that the world in general admits a thing to be wrong, but tacitly condones it, does not tend to make it ethical; as well might we say, if we would admit by this sort of reasoning, that abortion is becoming ethical, that adultery, fornication, prostitution, the general rottenness of politics and politicians, the lying, grafting and misleading of the public by the administration of our government is becoming ethical.

In saying that: "Ethics, philosophy and religion adapt themselves to the new conditions in life and declare the standards of this century or the millenium or this era as the only ones true and

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good," Mr. Dekker uses Sophism so as to make his argument uncontrovertible.

As long as Mr. Dekker drags in the Millenium, it will be hard for me to say him nay,—for it is impossible to deny that abortion may not be considered ethical in 999 years.

I do deny however that so far Ethics, Philosophy and Religion have adapted themselves to conditions.

I rather hold that Philosophy develops Ethics from the abstract, as it were, laying down rules of conduct, which, being that they are not adapted to conditions as they exist, cause the constant struggle between the dictates of morality and ethics and the desires of the flesh; between ethical conduct and unethical behavior.

Mr. Dekker says: "If I can show that abortion is widely practiced, and that society condones it, I shall have strong evidence of a drift toward the moralization of abortion."

I deny this.

There are a great many things which society does not punish and still does not consider moral.

I admit that uterine curetage may become more common if no thoroughly reliable contraceptive is discovered and brought into general use.

But,—I also admit that hold-ups in New York may become more and more common, if no remedy for the present social unrest be found. But does that prove that hold ups in New York are becoming ethical and moral?

I deny that present economic conditions encourage abortion any more than they did forty, thirty, or even twenty years ago.

Mr. Dekker mentions the housing situation, uncertainty of food supply, increasing rents, increased cost of necessities as causes for an increased demand for abortion.

Admitted, for the sake of not obscuring the argument, that the increase in the price of necessities and the increase in the price of luxuries, with the people's present idea that one must first have the luxuries and use what is left for necessities, makes for a tolerant attitude towards abortion.

Admitted that: "Faith in the high destiny of the human race to build a progressively beautiful world is receiving in these days a terrific shock."

Admitted that: "People in this mood refuse to have children, when their avoidance can be so easily accomplished."

Admitted all this; admitted the emancipation of women; admitted all the other things Mr. Dekker drags in, which tend to

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cloud the issue. Do any of these prove or tend to prove that abortion is becoming moral or ethical?

As a matter of fact, abortion has been practiced from time immemorial. I do not believe that it is any more common at present than it used to be years ago,—but what has become more common is the propaganda for abortion.

No, abortion is not becoming ethical.

The talk of "voluntary motherhood" leads us further than to making abortion "moral."

Mr. Dekker says: "Is it any wonder that millions of women in the modern world feel that if an abortion is desired, no third person has a right to interfere?

What does such talk lead us to?

May we not also say, that millions of women, who, in the words of Mr. Dekker "demand more leisure for play and personal adornment to please both herself and men," who have their "heart set on having what many call 'the good things of life,' here and now—who demand the same right to play "the game of life as men"—commit adultery and fornification and do it "tacitly, of course,"—but does that prove that this is making it moral and ethical?

No matter how many physicians do commit criminal abortions; no matter if every one does it; that does not make it ethical or moral. No matter how many physicians give prescriptions for morphine or whiskey to people at their request; no matter if every one does it. That does not make it either ethical or moral.

Mr. Dekker's statement that it is probably impossible to find to-day a single physician or surgeon in prison for abortion is not based on fact. I am quite certain that quite a number are serving time at present, while a great many are paying blackmail and for protection to grafting officials, so as to keep out of prison.

Mr. Dekker says that where there is strong opposition to a practice, society never fails to punish and punish harshly.

Is that so?

Does not Mr. Dekker know that the man who steals millions is likely to go absolutely free, or will be pardoned after serving a short period, a small part of his sentence, while the man who steals a loaf of bread is likely to receive a severe sentence and serve every day of it?

Does Mr. Dekker wish to say that stealing millions is becoming ethical?

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Mr. Dekker says that abortion has now become one of the means which help to maintain the high standard of living of the American Family.

Ye Gods and Little Fishes!

Maintain the high standard of living of the American Family by means of Contraceptives and Abortions.

Mr. Dekker!!

Is, what you consider the high standard of living of the American Family measured by the price of the Victrola and Player Piano in the Parlor, the Limousine in the Garage, and the number of Silk Shirts of the husband and the number of Abbreviated Gowns of the wife?

Shall we bring up our young daughters by instilling into them the idea that "they have the right to enjoy the good things in life?"

Why not?

And why not make a ceremony of it?

At the time of the first menstruation, let us have a ceremony like the Jews have at the time of curcumcision.

Let the family physician, with due regard to all necessary hygienic precautions insert into the womb of the little maiden (deleted by the spirit of Comstock) one of the best contraceptives known, and then let her be given a tube of Calomel Ointment, a two quart Douche Bag and a bottle of Antiseptic and Contraceptive Solution. Then, let father and mother and friends kiss the little maid and let her be told: Now go my little maiden and enjoy the good things of life. You have been well instructed in all necessary precautions, but, should aught untoward occur, consult your family physician, who will, if necessary curette you or inject Salvarsan.

Go my little daughter and enjoy life and voluntary motherhood.

Oh, Phallic Worship.

Does Mr. Dekker call this moral?

Would he call this becoming ethical?

Admitting as a matter of argument all the principal statements set out in Mr. Dekker's paper, has he not instead of proving that abortion is becoming ethical, rather proven that the mass of people is becoming unethical and that the average American Family is becoming decadent?

New York.

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IS ABORTION BECOMING ETHICAL?

Comment on Herman Dekker's Article in Medical Life

By James F. Morton, Jr.

I should agree with Mr. Dekker that one of the evidences of the slow progress as yet made by humanity toward a real civilization is the lack of "social toleration of differences." A higher type of mentality will reach the conclusion that it is only through variation that progress is to be expected; and that a highly socialized society will for its own sake encourage the maximum development of individuality. It is far from correct, however, to assert that such a condition had already been developed in Greece or Rome. The judicial murder of Socrates, the ostracism of Aristides, the persecution of Anaxagoras, are sufficient answers as to the former; and the iron uniformity of Rome is too well known to require specific citations.

As to the toleration of abortion, the outstanding fact, not at all noticed by Mr. Dekker, is that it is accepted as a *pis aller*. Resorted to by many women, as it is, simply because an anachronistic code bars them from the more wholesome course of employing the preventive means that would hinder unwelcome conception from taking place, it is realized to be their only way out as against the greater evils that would otherwise assail them. Hence abortion is tolerated from a sense of justice, crude though it may be. It is instinctively felt that when the state itself forces pregnancy on a woman, under adverse and often monstrous conditions, through penalizing the very knowledge which it is her right to have, and which would save her and society from disaster, she cannot be too severely blamed for escaping by the only road open to her, undesirable *per se* as that road may be. The tolerance is the expression of human sympathy and an instinctive protest against rank and cruel injustice. Abolish the restraints on prevenceptive information; and both abortion and the sentiment which now so largely tolerates it will undergo a material decrease.

It is a pitiful fact that the medical fraternity as a whole has not risen to a sense of the larger principles involved. Only today I received a communication from a prominent medical organization disclaiming the credit which had been given to it for advocating a federal measure repealing the infamous statute by which vital knowledge is made a crime. I am sorry that I did not preserve the letter as evidence of a medieval state of mind of which the descendants of these anti-progressive physicians will some day be heartily ashamed.

New York.

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MR. AND MRS. CARNEY

I.

Mr. and Mrs. Carney
Had nine children,
And didn't want
Any more.
For Mr. Carney didn't make
Much money,
And Mrs. Carney said
She wasn't as strong
As she used to be.
So she asked
The priest
What to do.
The celibate smiled
Gently,
And placed a fatherly hand
Upon her shoulder,
And pointed out
Her duty.

II.

Mrs. Carney bore
Fourteen children
—Half of the brood
Lay buried—
And she was
Tired.
Mr. Carney put on
His best clothes,
And put his week's wages
In his purse,
And went to see
The eminent Dr. O'Farrell.
He stated his case,
And asked the learned physician
What to do.
The man of science glared,
Then handed out
Advice—
But not the kind
That Mr. Carney
Had come for.
Mr. Carney stood up,
His hand on his hip,
And asked the Doctor,
What he owed him.
Pompously the physician
Declined a fee,
And bowed Mr. Carney
Out.
There was a low whistle
At the door,
And in rushed
The Doctor's daughter
To show her papa
Something.
Dr. O'Farrell was married
For nineteen years,
And Edna was
His only child.

III.

Mr. Carney attended
A Birth Control meeting.
He went again,
And finally brought home
A formula.
Mrs. Carney held it
In her hands
And wept
For the lost years.
Mr. Carney placed it
Inside the Bible.
At times he copied
The prevenceptive
For friends.
He talked about it
On occasions,
And became known
Throughout his neighborhood
As an advocate
Of Voluntary Parenthood.

IV.

One day a woman called
And told a tale
Of excessive childbirth,
Showing her shabby dress,
But not the jeweled rings
That sparkled underneath
Her gloves.
She drank the cup
Of chocolate
That Mrs. Carney
Prepared;
And got the formula

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In Mr. Carney's
Handwriting.
Her face was sleek,
But Mr. Carney
Did not think
Of that.
She walked hurriedly
Around
The corner,
Then rode off
In a taxicab.

V.

Mr. Carney stood
In court.
The judge leaned forward,
Threateningly.
"A man like you," he cried,
—While voice and finger
Shook—
"Is a menace
To society.
You are a traitor
To your country,
And to your God."
He sentenced
Mr. Carney
To prison.

Then leaned back
With that peculiar
Satisfaction
Which comes only
To those men
Who save
Society.
The judge glanced
At his watch.
He had an engagement
That afternoon
To attend
The horse show
With his wife.
They had been
Married
Twenty-seven years,
And never had
A child.

VI.

O tell me, Mother Earth,
Is there any place
On your broad bosom,
Where your weary son
Can escape—
The hypocrites?

Birth Control and Medical Incomes

A New Jersey physician recently wrote to the Journal American Medical Association, asking:

Has the Journal ever published a discussion of the effect that birth control has or would have on the income of physicians? Any information you may be able to give me upon this subject will be thankfully received.

The *Journal's* answer is as follows:

We have no reference to any article on the effect which birth control would have on the income of physicians. The social aspects of this measure in relation to the general population are so broad that the relative importance of any effect it might have on the income of physicians is infinitessimal.

Is this all there is to be said on the subject, or can any of our readers enlighten our New Jersey brother?

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Sex Education and Venereal Infection

Does sex education begin too late to be of real service in safeguarding young people against venereal disease? This question has been raised in a recent report issued by the U. S. Public Health Service. The authors, Dr. C. C. Pierce, assistant surgeon general, and Edgar Sydenstricker, statistician, are careful to explain that the statistics available as to the ages at which the disease is most often contracted are as yet too scanty to do more than suggest the question and cannot answer it.

These statistics, so far as they go, however, suggest that children, especially those of the class which is ordinarily considered most likely to be infected, leave school long before the age at which sex education in regard to the twin diseases is commonly given. The earliest incidence as shown by these records appears in men at the age of 15 and shoots swiftly upward at 16, reaching maxima at 19 and 23. After 23 it drops as rapidly as it rose. Attention is called to the apparent significance of the fact that the ages between 16 to 23 are those between the most usual ending of school and the beginning of married life. For the women the incidence of the diseases ranges about two years earlier than in men.

The Public Health Service is now engaged in assembling and tabulating a very much larger number of cases that will probably give much more definite results.

Is Continence a Desideratum?

Dr. Lee Alexander Stone, regional consultant United States Public Health Service, delivered an address before the National Congress of Mothers and Parent-Teachers Association, in which he said:

> Continence is possible. It is just as healthful for a man to refrain from sex indulgence until he marries as it is for a woman. Men demand chastity of the women they marry and declare they would not wed those who are unclean morally. They refuse to see how inconsistent they are, but insist that sexual intercourse is necessary to their well being and that unless they indulge, their health will be impaired.
>
> No man should demand more of a woman than he is willing to give in return. His failure to give proves him a weakling and the woman the stronger of the two. Sexual intercourse indulged in by single men is absolutely not necessary to keep up manly vigor. Men have been known to abstain for years from indulging in sexual relationships and still maintain their virility. Continence has been proved healthful by scientists.

This address was published in *Modern Medicine,* and the question which arises is this: Is the assertion of Dr. Stone truly representative of modern medicine, or is it a survival of medieval medicine?

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After Office Hours

By Gorham B. Munson

A Psychoanalytic Novelist

One thinks of the younger American literary generation as a Juggernaut crashing with increasing momentum into the puritanic and smug and hideous resistances of our national life. Five novelists, James Branch Cabell, Zona Gale, Sinclair Lewis, Floyd Dell and Sherwood Anderson, have made noticeable dents in the past year. A sixth novelist, Waldo Frank, has likewise hurled himself at the enemy, but his assault does not seem to have attracted so much attention.

Perhaps Mr. Frank's outlet is criticism rather than the novel. Certainly his *Our America* is a brilliant, unanswerable and widely-appreciated statement of the investigations, accomplishments and aims of Young America and his handbook on Copeau's French theatre in New York is sound aesthetic judgment. It is too soon, though, to say that his only forte is criticism for this reason: he is an experimental novelist. The others have taken the novel in some one of its accepted forms. Frank has groped about for a new form and paid his penalty in a lesser vogue. Most reviewers received very little from *The Unwelcome Man* in 1917 and not much more from *The Dark Mother* in 1920.

H. L. Mencken writes that *The Dark Mother* "quite flabbergasts me. I am interested in the ideas of Mr. Frank and eager to hear them, but here he swathes them in such endless yards of writing that I am unable to make them out." Those who know Mr. Mencken's services to American letters will translate this into: "I have a great many books to review, bootlegging takes so much of my energy, and I am too lazy at present to read this book carefully." Kenneth Burke calls *The Dark Mother* "decidedly a transitional novel" and adds that "in any case, Waldo Frank is *en route* for something or other." Stark Young wanders inconsequently around the book but coins an apt descriptive phrase when he says that life (the dark mother) is to Frank a sort of "Freudian black mammy." The N. Y. *Times* reviewer, as I recall, condemned the book as immorally anarchic, a token to all good men and true

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that here is probably a book of some value. Lastly, Paul Rosenfeld writes the most competent criticism of it in the *Dial*. He says that Frank puts "an acute dislocation" in his novels "between the protagonists and their experiences," that he fails to achieve "the personalization of his characters' sensations," that the reactions of all his characters are largely identical, that Frank writes novels primarily as confessionals, and that "what alone matters is, that he, and all of us, arrive, somehow, through rigorous self-criticism, at that state of maturity in which the artistic energies are turned outward, toward other people."

To Rosenfeld's criticism I have little to add. Satisfy me the book did not and hence for me it was not a well rounded work of art. But I would strongly recommend a reading of it. First, for its prose, a nervous high-strung vivid diction, with a great deal of "hotness" in its depiction of scenes of passion. The prose shows, I should say, a *vers libre* influence. At any rate, it was an interesting exercise to arrange certain paragraphs in verse form. Deleting here and there an article or an adjective produced some striking verse rhythms. Second, for the author's employment of psychoanalysis as a novelist's instrument. Tom Rennard has a sister complex, David Markand a mother complex, the homosexual tinge of their friendship is symbolically disclosed, there are revealing slips of the tongue, and so on. Third, for the imprisonment within its covers in various places of the maddening swirling nerve-crucifying drive of New York City. Fourth, because it is an experiment.

The hitherto unsaid things I have to contribute are an objection to the Rev. Curtin Rennard as being too much the stock stage figure of the Puritan and an objection to the ending, David's marriage to Helen Daindrie. This last smacks of the conventional happy ending and is too easy and too inconclusive. Was Waldo Frank, I wonder, baffled by his book in the last fifty pages?

Unsatisfied as one is with *The Dark Mother,* one cannot help being excited while waiting for Frank's next novel. That *may* be a great book.

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CONTENTS FOR FEBRUARY 1921

The Garage Plague in Washington
An Exposure of an Intolerable Situation
By ROBERT WILSON SHUFELDT, M.D.

Choosing a Medical School in 1882
The Second Instalment of Medical Education in Chicago
By BAYARD HOLMES, M.D.

The Life of Jacob Henle
The Concluding Chapters, containing Henle's Contributions to Science
By VICTOR ROBINSON, M.D.

Radium, and its Therapeutic Value
The Evolution from X-Ray to Radium
By A. H. WERNER, M.D.

The Weaker Sex ?
A Query and an Answer
By THE REV. ARTHUR E. WHATHAM

Vol. 28 No. 2

Copyrighted and Published Monthly by the Medical Life Company
12 Mount Morris Park West New York, N. Y.
Life Subscription, Fifteen Dollars *Annual Subscription, Three Dollars*

February 1921

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AMERICAN JOURNAL OF UROLOGY AND SEXOLOGY
NASHVILLE JOURNAL OF MEDICINE AND SURGERY

(*Established* 1851)

Edited by VICTOR ROBINSON, M. D.

VOLUME 28
NUMBER 2

FEBRUARY 1921

NUMBER FIVE
OF NEW SERIES

Life's Thermometer

THE GARAGE PLAGUE IN WASHINGTON

About a year or more ago, I published an article in the *Medical Record* of New York City, in which I discussed some of the features of the automobile plague as they presented themselves in the cities of the United States, and not a few of the statements I made, have since been abundantly demonstrated, continuing to be so every day that passes. In the present contribution I propose to enlarge upon these, selecting Washington as the city in which they may be exemplified; how well they may apply to other cities I have taken no occasion to prove.

That automobile accidents, murders, and fatalities are more numerous in Washington today than they were a year ago, goes without saying; and it is equally true that the health of her citizens is more generally and disastrously affected now than it was a twelfthmonth or more ago. So, too, for other features of the plague that we have among us, such as monopoly of the thoroughfares; the discomfort and danger to pedestrians, and the besmirching of the streets and sidewalks in all directions, in the city as well as in its environs. All this has recently been greatly augmented, so that a "killing" by an automobile on a street in Washington has gotten to be a sort of tri-weekly news-item, only interesting those most nearly concerned.

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The killings that are now constantly going on would really be exciting, not to say exhilarating, were it not for the fact that there are legal and moral sides to consider. It has practically come to pass that all that remains to be done in such cases is to gather up the remains of the victim or victims, and to see to it that the local press gets a brief account of "how it happened." As a rule, the driver of the car that kills a person, or smashes another car, or knocks a cow head over heels, or rips up anything in its course, seldom pretends to stop to ascertain the kind or amount of damage he or she has done, but immediately "beats the speed-limit to a frazzle," and in short order leaves police, victim, and fragments far, far behind. It is extremely rare nowadays to capture such offenders in Washington, as may easily be proven.

Only a few days ago, some wiseacre of the city proposed that a "safety week be set aside each month, during which no such killings should be allowed." Did one ever! Why not make it an ordinance to be enforced every day of the year? Seems to me it would be favorably considered.

There is a law in Washington to the effect that drivers of cars or automobiles of any description are not to sound their horns, day or night, with the view of attracting the attention of inmates of buildings along their routes, when they desire to have some one in any particular building join them; but this law is violated every time the clock ticks, and the police are helpless to stop it. Such "tootings" can be heard in all parts of the city any night in the week after midnight, much to the annoyance and discomfort of law-abiding citizens. Again, more or less disregard of the law prevails requiring an automobile of any description *not* to pass a street car discharging or taking on passengers.

Where garages may be built, and occupied by one or more cars, has never been seriously considered by the proper authorities in the city of Washington; as a consequence, we find them *squeezed in* in all sorts of places—in the vast majority of cases with an utter disregard for the health, comfort, and general well-being of the residents living closest to them. This disregard of the various conditions and interests involved has had a most remarkable result. Without making any attempt to consult the comfort of any resident; ignoring the question of decency and appearance, and casting all the grievances and annoyances of others to the winds, garage builders and owners sandwich these structures into any old place that will accommodate one. As a consequence, and from this viewpoint, Washington has pretty

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much the appearance of an over-grown hornet's or yellow-jacket's nest, with the gray, outside paper-covering torn off. Riddled everywhere, and the chinks filled in with garages of every shape and size. In the vast majority of cases, no regard has been paid to maintain either the beauty of the city or the comfort of her inhabitants.

But this flagrant neglect and mismanagement by no means terminates here; the wholesale and utterly reckless garage-building is going on with no regard whatever for the effect upon previously established and occupied homes, hotels, and apartments. With your leave or by your leave, in hundreds of instances, these garages have been erected, and used day in and night out for the purpose for which they were erected, without even so much as looking into the matter of the effect they might have, in any particular instance, upon the occupants of established homes near them, in no end of cases but a few feet away from the garage being built.

Now, the occupancy of a garage by one or more machines, when the latter are in constant use, involves a number of unavoidable attributes that are more or less deserving of legal consideration and the concern of the proper municipal authorities. We have to deal with the noises created by the opening and closing of the doors to the garage; with the *habits* of those who use the cars as to the *hours* of coming in or going out, together with loud talking, hilarious gaiety, use of musical instruments, and so on; the sounding of the horn of the car; the various noises made by the car being taken in or out—noises mainly due to inexpert handling of the machine; having dogs along that may bark or howl incited by the car being taken in or out; the highly poisonous gases given off by the car when taken in or out of the garage, and, finally, with a consideration of the prevailing winds that carry the poisonous gases into open windows at night, or even during meals in the summer-time, when windows are left open for health and coolness.

Now we may illustrate by selecting an ordinary Washington example from among thousands of similar ones—the dear, gentle, voteless citizens *as a rule* never object to the treatment. Here is a home in a fine, residential district, with many similar homes for several long blocks about; it is situated on a fifteen-foot alley, and has some nine or ten large windows opening on the alley. The prevailing winds and breezes is most instances blow direct into those windows, and for nearly fifteen years the same family has occupied this home, being engaged upon work

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of decided usefulness, not to say importance. Across the alley, and flush with it, is another home, with a 25x25 foot yard in the rear. The owner of this latter house erects a double garage on this small lot, the noisy and ill-constructed doors of which are but little over twenty feet from the bed-room windows of the first-mentioned home; one of the large windows of the dining-room is very close to the garage. For the sake of health and fresh air, this family keeps the bed-room windows open all night, and in summer the aforesaid dining-room window is open during meal times. One member of the family is under treatment by a physician for a serious throat-trouble, and, in addition to local treatment, plenty of fresh air, day and night, has been prescribed; besides, the nature of their work during the day demands ample rest at night for the occupants of this home.

Both cars in this garage come and go at very irregular hours of the day and night, sometimes coming in between one and two o'clock in the morning. Nine times out of ten the incoming car and what attends its housing, will arouse the members of the home in question, frequently putting them in such a frame of mind as to render it impossible for them to sleep again that night and to that extent unfits them for the labors of the following day. More than this, the highly poisonous fumes flow in through the open windows, endangering the health of the occupants, militating against their recovery, and rendering futile the treatment of their physician; the various other annoyances need not be dwelt upon here.

As a rule, the owner of such a garage is perfectly oblivious to the matters of the health and comfort of the occupants of this home, and utterly ignores the efforts of the police and health officer to eliminate the menace and dangerous nuisance.

In as much as the home thus assailed was first established in the neighborhood, the far more recently erected garage stands in the light of an *introduced* menace to health, and is a pronounced nuisance.

This is a matter that should be settled by the departments of police and health, and it ought not to call for the menaced and injured family to carry the case into court. However, in a few instances, cases of precisely the same kind have been taken into the District Courts; the latter have sustained the plea of the plaintiff, and the owner of the offending garage ordered to do away with the menace and nuisance caused by his car or cars occupying the same. But where this has been unsatisfactory, the complainant may bring an action for damages against the

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owner of the said garage on the aforesaid grounds, and sue for damages to his health and peace of mind through an introduced nuisance into his immediate vicinage. To the best of my belief, a few such cases in the District have likewise been decided in favor of the complainant—as with very good reason they should.

As a matter of fact, the persons so annoyed and endangered are entitled to the full protection of the health office, the police, and the courts. The complainant avers: My home was established here long before you built your garage; the latter has amply proved to be a menace to my health and peace of mind, and you are amenable to the consequences. The owner of the garage says: If my car or cars destroy your night's rest, flood your home night and day with a highly poisonous gas to the detriment of your health—why, you have the privilege of getting out of your home and going somewhere else to live. An absurd argument, too ridiculous for consideration; and the law courts of this city should, in every instance, so consider it.

Washington, D. C.

R. W. SHUFELDT, M. D.

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The February Contributors

ROBERT WILSON SHUFELDT describes *The Garage Plague in Washington.* Major Shufeldt's inexhaustable pen has produced considerably over a thousand volumes, monographs and articles, but if he succeeds in reducing, even to a slight extent, the ever-growing menace of the automobile, it will be the crowning achievement of his industrious career. Among Dr. Shufeldt's scientific output are his Contributions to Anatomy of Birds, Outlines for a Museum of Anatomy, Contributions to the Study of Heloderma, the Myology of the Raven, Scientific Taxidermy for Museums, Lectures on Biology, Osteology of Owls, Osteology of Pigeons, Studies of the Human Form, Review of the Fossil Fauna of the Desert Region of Oregon, and Further Studies of Fossil Birds with Descriptions of New and Extinct Species. He has photographed, with much success, varieties of beautiful birds and beautiful women.

BAYARD HOLMES, whose *Medical Education in Chicago* (1882), began in our January issue, now describes the rather haphazard way in which he chose a medical school. An interesting touch in this instalment is its belated echo of resurrection-days.

A. H. WERNER contributes a disquisition on *Radium, and its Therapeutic Value.* We like Dr. Werner's phrase, "Humanity demands quite often that we deceive our patient, but never that we cheat him."

ARTHUR E. WHATHAM writes on *The Weaker Sex?* This gentleman's contributions to our pages place him among the acutest sexologists of modern times. His previous essays, all worth a second reading, are:

The Social Evil: Who is to Blame? ***American Journal of Urology and Sexology,*** **July 1917.**
Man, Woman, and Morals, ***ibid,*** **November 1917.**
Has Woman Stronger Sexual Desire Than Man? ***ibid,*** **July 1918.**
Modesty and the Modern Woman, ***ibid, July*** **1919.**
Women and Clothes, ***ibid,*** **April 1920.**
Does Nakedness Tend to Promote Immorality? ***ibid,*** **October 1920.**
The Seducer in Seduction? ***Medical Life,*** **December 1920.**

GORHAM B. MUNSON, whose *A Psychoanalytic Novelist* appeared in our January number, contributes the second instalment of *After Office Hours.*

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MEDICAL EDUCATION IN CHICAGO

In 1882 and After

II—Choosing a Medical School

By Bayard Holmes, B. S., M. D.

All the students had left the tables in the little restaurant on Ogden Avenue, when a tall thin alert young man came and sat near me. He ordered his dinner in a pleasant but thin voice. My papers, catalogues, and other medical notes had been spread out before me, and I was trying to decide what to do under the uniformly uninviting educational prospects which they furnished.

My admission to Harvard Medical School, with advanced standing on a previous examination, required three years residence in Boston. My father didn't want me there, because my brother, George Elsworth Holmes, was studying music in Boston and singing on a salary in a church choir! Father hated the idea. He considered music an accomplishment and not a serious occupation for a man. He loved music emotionally and he was very fond of my brother George, his youngest son. He felt that singing in church was all right enough, but to be paid for church singing was humiliating to a big strong fellow able to work at a machine and earn good money for skilled labor. Then moreover, my father was piqued at the scholastic ruling of the Harvard faculty. He said it was finical for them to give no credit for my extensive anatomic work, both comparative and human, done at home and in non-medical schools. The credits were freely given me for chemistry wholly done in non-professional schools, but attested on examination. He urged me not to put my head into such a pedantic lion's jaw. So it was left me to take up with some Chicago school, for my father was going to furnish the cash.

I had hardly folded up these papers and my father's letters when a conversation sprung up with my convivial neighbor. He was marvellously entertaining and the afternoon was waning when we had finished looking over his histologic laboratory at the

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Homeopathic Medical College on Wood and York streets. Dr. Frank R. Day was a recent graduate in medicine and was now teaching microscopic anatomy and pathology. His laboratory was on the north side of the new college building and was admirably equipped with very fine imported microscopes and microtomes. He explained to me his system of teaching histology by requiring the students to catch the cats, remove with their own hands the viscera to be examined, harden pieces of proper size in hardening solutions prepared by themselves from formulae out of Lee's Vade Mecum, imbed these hardened pieces in the proper position for each, cut, stain, clear and mount each series, and then sketch and describe each part in a definite order.

It is needless to say that I was carried away with this truly pedagogic plan. Dr. Day was an easy and mild conversationalist, and wholly absorbed at the time in his own histologic studies which he openly placed before me. His series of slides illustrating the minute anatomy of the mucosa of the intestinal tract from the tongue to the anus in several mammals has never been surpassed and rarely equalled. At sundown I went to the old St. Charles Hotel and wrote a letter to Professor Buel P. Colton of Ottawa, Illinois, and told him there was at least one teacher of histology in Chicago and one medical school that possessed twenty-five first class microscopes and nearly as many microtomes.

The next day was clinic day, and Dr. J. W. Streeter was in the amphitheatre and I was on hand. The school term had not yet opened but there were a dozen or more students about the place, waiting in a curious attitude for the examinations and demonstrations to begin. The amphitheatre was about as well equipped as a spare bedroom of the period, with the bed displaced by a fearfully and wonderfully made operating chair. All of Dr. Streeter's patients were women. He was a so-called gynecologist, a new word at that time and one pronounced in two or three ways. Every doctor followed his fancy in this matter.

When the first patient was wheeled into the arena, followed by the professor, I was astounded at the loud clapping of hands. It was a procedure that I never could get used to, but it seemed to be a tribute given every medical teacher. It appeared barbarous to me then and does yet. The patient all doubled up in the chair was covered with white sheets, and the attendants and the professor were attired in none too inviting white gowns. The vaginal examination and demonstration seemed inconclusive and shocked the scientific student and schoolmaster that I was, and I saw no occasion for the unmeaning exposure.

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When, however, the Doctor began to speak, everything else was forgotten. His was such a big, hearty human voice, masculine and yet cultured and restrained, that every word carried conviction and left an ineffaceable memory on the fully hypnotized students. The simple lesson of this clinic needs no record, but the dignity and ease, the masterful simplicity and directness of the examination are rarely to be seen in the college clinics of today, with their noise and hustle and didactic chatter of nervous and feeble voiced clinical novices.

It was my happy privilege to meet Dr. Streeter quite intimately in after years. He frequently called upon me in the prehospital years to prepare an operating room in a private house for a surgical operation of great moment. In one case a desmoid tumor of the broad ligaments was removed by him, and I used the specimen and the history of this case as the basis of one of my earliest theses before the Chicago Gynaecologic Society. After Dr. Streeter had been incapacitated for operating by an injury to his hand he wrote two remarkable books, which were published in 1904 by the Macmillans: "Doctor Tom, the Coroner of Brett" and "The Fat of the Land, the Story of an American Farm."

The afternoon of the clinic, Dr. Day took me into the chemical laboratory and introduced me to Dr. Clifford Mitchell, the professor of chemistry and the laboratory teacher. He was doing the routine service work of the clinics that morning and making the microscopic examinations of the urine. The laboratory was large and well equipped. The reagents were in standard bottles and the storeroom was well supplied with the apparatus and chemicals necessary for the courses given. There were two of these, one distinctly theoretical and the other clinical, one for the freshmen and one for the seniors. Dr. Mitchell took to me at once and engaged me to help him in the laboratory of theoretical and inorganic chemistry. It was very easy but highly educational work. This was the beginning of a long and very familiar acquaintance, which has been greatly to my advantage and it stimulated me to the application of simple chemical methods and theories to the solution of clinical problems. Dr. Mitchell has always excelled as a teacher and a practical technologist. As long as the school lasted his laboratory was a center of scientific interest and enthusiasm.

As I look back on the first week of probation as a medical student, another figure looms up in my memory in a manner too indistinct to detail, but very strong as a character study. It was

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the professor of obstetrics, R. N. Foster. He was and is yet, for he is in practice at this writing, a grand man, clean, strong, forceful and reserved. He was a Lincoln sort of man, light and easy in his informal manner, but serious and self reliant and wholly without bluster. It seemed to me then that here was a group of big men from whom I could learn and with whom I could study. I returned to my hotel that night and wrote my father that I would stay in Chicago and study at the Homeopathic Medical College. I then knew no difference between one kind of medicine and another.

The following day I visited the University of Chicago, which was struggling along in the old building at 34th and Cottage Grove Avenue. Some one was working in the observatory, and I was told to come back that night to see Professor S. W. Burnham, with whom I thought I had something to discuss about a comet I had seen a few nights before, on which comet I had made five observations with a view to determining its identity or its orbit. As it turned out we made friends from the first, and many years afterwards he was my patient and I was his grateful and reverent doctor for many years—a blessed memory.

The library of the old University was in the rooms adjoining the observatory tower. While a student at the University in 1871-72 this library had been my retreat and my delight. Many of the books given the University were beautifully bound and beautifully printed. Some old English books made a great impression on my mind, and even the Bohn's Classics with their beautiful covers and fine type entranced me, and I read as many of them as I could find time for.

The first acquaintance of mine with the University Library was before the Great Chicago Fire, which consumed S. G. Grigg's splendid book store on State Street, between Washington and Madison streets. There has been nothing in my estimation equal to that great bookstore in Chicago since the fire. I read Bohn's Virgil in the splendidly bound edition at the University library, and bought a cheap copy at Grigg's which I still possess, and when I open its bluish cloth covers I remember the soft smooth leather bindings with the gilt edges and the clear type in the University tower room, and whether I turn my eyes one way or the other, I am looking out the diamond paned leaded windows on the old narrow campus and Douglas Park.

About September 15, 1882, the medical schools of Chicago opened, and I came to the city alone, leaving my wife, my young son and my wife's aunt in Ottawa, where I had been teaching,

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and where I had a very comfortable home. I took a room on Flournoy Street, with many other medical students, and jumped into routine study with enthusiasm. But there were many disappointments awaiting me. The samples of the medical faculty that I had met were not fair samples. Many of the other men were common, inferior, or bizarre. Then for the first time I found out that the students of the homeopathic schools were not given advanced standing in the other schools, and were not even admitted to examinations. This did not seem to me a possible condition. It was too preposterous for scientific men and institutions.

During the winter there was no dissecting material in Chicago. The professor of anatomy began his lessons with the bones of the human body. I owned a skeleton bought of Dr. Chester Hard of Ottawa. It was said to be that of a rebel soldier who had died at the prison known as Camp Douglas, and the body had been dissected by Dr. Hard while a medical student in the 1860's. The method of my anatomy teacher was bad, clumsy, and terribly unpedagogic, but he worked quite as hard to keep up with his class as we did to get the lessons he assigned. Everything was fresh and alive about him. The first Quiz Compend had just come out, and it relieved us from taking notes. We were obliged to practically commit to memory and recite the description of each bone as given in Gray's Anatomy. When we got to the soft parts of the body there was no prosecting material, and the lectures were given with the manikin, which was a fine one from Paris.

The seniors went out on clinical work, and one of them brought in a baby that had died on his hands, and he had been given the body. This senior sold the body to a class mate, Waggoner, who took me in on the deal, and we dissected this little cadaver together. It was not my first dissection, for I had dissected a human body in Shabonna's Grove, and afterward better material in the shape of amputated extremities in my schoolroom at Waterman, Illinois. They were the remnants of a tramp killed on the railroad. But this baby dissection was hard on my nerves in more ways than one. The vessels had not been injected. The structures were on so small a scale that it was hard to find anything, and the development was relatively embryonal.

We had been working about a week on this cadaver, and had made some very satisfactory demonstrations, when one day the elevator came rumbling up to the dissecting room and the janitor pulled off an enormous trunk, and took out of the trunk

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the body of a young woman and stretched it out on a dissecting table. It was a beautiful sunny winter's day, the room was very light, and the twenty dissecting tables were empty except for this dazzlingly beautiful female form. There was a pounding on the stairway door, and an immaculately dressed young man came in, and told the janitor he must have his money right away. While the janitor was gone our smart young fellow made fun of us for dissecting a baby, and called us deprecating names because we had not been out resurrecting, as he had, at neighboring graveyards. This cadaver was used for a week in the anatomy lectures, and there was much rejoicing among the students, but suddenly the place was filled with police and reporters. The cadaver had disappeared. The faculty was called together to meet the sheriff and police. The janitor moved the hard coal, and the completely flayed remains of a distinguished lady from a nearby county seat were sent home in an elegant casket for reinterment. Two students of Rush Medical College were indicted for grave robbery, and one of them was sent to Joliet. The other had escaped to Texas. Some two years later these men received their doctor's degree from Rush *in absentia!*

During this winter and partly as a result of this incident, Dr. Strong succeeded in putting an anatomical material law through the Illinois legislature and organizing a demonstrators' association. There has never been any lack of dissecting material in Chicago since that time. This was the first association in which homeopaths, eclectics, and regular physicians met. These meetings were the beginning of the end of homeopathy, as these memoirs will abundantly demonstrate if they are considered of sufficient value to be continued.

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THE LIFE OF JACOB HENLE

By

Victor Robinson, M. D.

CONTENTS

I. BOYHOOD DAYS
II. THE MEDICAL STUDENT
III. ADVENTURES IN BERLIN
IV. THE ZÜRICH PERIOD
V. ELISE EGLOFF
VI. PROFESSOR IN HEIDELBERG
VII. THE CALL TO GÖTTINGEN
VIII. THE JUBILEE
IX. CONTRIBUTIONS TO SCIENCE

VIII

THE JUBILEE

In 1866—a year famous for its quarrels—Bismarck and King George could not agree, and Bismarck characteristically ended the argument by annexing Hanover. By this act of absorption, the University of Göttingen ceased to stand apart in cloister-like aloofness, for its faculty automatically became members of the University Society of Prussia. Henle had refused to come to Prussia, but Prussia had come to Henle.

The new state of affairs divided Hanover into those who favored the annexation, and those who disapproved, and in the factional disputes that naturally followed, many old friendships were broken. Henle was at all times opposed to Bismarck's internal policy, and bitterly resented the statesman's present tactics, and therefore five professors resigned from his Friday club. For some time to come, at the least provocation, Göttingen was split into Prussians and Hanoverians; for example, in 1868, Henle's son Karl, arranged a ball at the museum, and a sleigh-party comprised of students and young ladies. They rode out into a storm that traveled straight to the door of father Henle, who thus explained the cause of the tempest:

> The sleighing party which took place a few weeks ago and the dance that followed, resulted in a complaint of the police-director to the pro-rector, wherein he summed up the sleighing party under the heading of 'gathering under free skies,' for which the police is to grant permission forty-eight hours in advance. It required much paper to convince the bone-headed bureaucrats that you could not order snow to remain on the ground for forty-eight hours.
>
> Another and much worse excitement, which extended even to the lowest strata of society, and which once more divided the city into Prussians and Hanoverians, was the ball arranged in the Museum by

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Karl and his friends. It required a general meeting of 120 earnest men to decide in a conference, whether there is a difference between a feast and a ball, and whether the feast could only be arranged by private individuals and the ball only by the director. To speak more correctly, they merely seemed to hold this conference, for its actual purpose was the official assassination of the present director. I shall, therefore, like Bismarck, be more constitutional than is expected, and shall resign the post which for seven years deprived me of much time, and during the past two years caused me much aggravation, and was only of value to me in so far as I had the disposal of the hall at my command, and was able to invite artists here and keep in touch with them.

Henle sought relief from these agitations by an excursion to Upper Bavaria. Tourists who visited the Tegernsee during the fall of 1869, were apt to come across a quintet whose hair was grey, but who chatted together with all the abandon of youth. Many years had passed since the dissolution of the Heidelberg circle, but now Henle, Pfeufer, Jolly, Gervinus and the orientalist Hitzig were together again, reveling in the beauty of the mountain-lake and in the luxury of old memories. Towards the end of the vacation, when Henle and Pfeufer clasped hands with the love of thirty years between them, they promised each other to meet again next year; three days later, word was brought to Henle, that Pfeufer, while journeying to the Achensee with his wife and daughter, dropped dead in the boat. Henle wrote to his sister:

Those were three wonderful weeks which I spent with my old friend. Never since we left Heidelberg to go in different directions, did we associate with each other so long and so uninterruptedly. Although the lake lay between our residences, we were together every day and usually twice a day. In the morning I had myself rowed over, and at noon his daughter rowed me back in a boat which she had hired. In the afternoon, we generally met together with our retinues on some beautiful spot whereto we went on foot, and Pfeufer in his carriage. Then I had to sit at his side while his grandchildren and my children played around us, and from time to time he would send me away to talk to his wife, who found it painful when she did not hear me.

We spoke of everything—our science, our politics, our families; it seemed as though I was to carry with me the conviction that we were of one mind in everything. He suffered somewhat from asthma, was more sluggish in his movements than before, tired easier, but mentally was as fresh and alive as ever. He did not think of any danger; his concern was chiefly that he would become too weak for his teaching activities, as the clinic exhausted him and the crowds of hearers in the hospital rooms oppressed him. He contemplated giving up the clinic. He still felt strong enough for lectures and for his office. We parted with the understanding to meet again next fall in a different place, for though we found Tegernsee charming, we had already drained its beauties.

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Three days later, he was dead. His death was such as he wished for himself and for me, for he said this in a letter which he wrote to me after our father's death. We cannot bemoan his fate; the autopsy showed that he had been approaching an unforboded serious affliction. But the situation of the wife and daughter who returned from a trip so joyously undertaken, with the corpse at the bottom of the boat! We received the sad news in Munich at the art exhibition. The distraction of the return journey, the life in the overfilled family house in Nürnberg, the pleasure in seeing the sisters in Mainz in good health, helped me to bear the first pangs of the grief. Now when I find myself in the old familiar rooms, I first feel how much the absent friend was tied up with all my doing and thinking.

Henle kept a bust of the departed upon his desk, and Merkel says that many a hallowed glance fell upon it. Henle wrote to Pfeufer's widow:

That our dear friend is unforgettable and that the breach which his death created can never be filled, I feel as much as you do. To me too, the world looks changed since I miss the heart which shared all my joys and sorrows, and I no longer can hope to give him pleasure by my work and draw from him a word of approbation. How vague everything seems that remains to me of friends, besides the memory of this one! You may, therefore, be certain that I find your laments justified, and that I shall never tire of hearing them as long as you feel the need to express them. There is a certain equalization of justice in this, that whoever had the happiness of possessing such a man as you did, must also accept the danger of the terrible contrast which death creates. But who would, because of this danger, place a limit upon such happiness! And when parting must come, there is no better consolation than the knowledge that nothing in happiness had been missed.

In this same year, our much-quoted Friedrich Siegmund Merkel, who was then a young doctor of twenty-four, arrived from Erlangen to become Henle's prosector in Göttingen, and showed devotion not only to the master's system of anatomy, but to his daughter Anna, and thus Henle acquired his first son-in-law. Merkel later became professor at Rostock and then at Königsberg; he wrote numerous anatomical articles and pamphlets, among his chief contributions being his treatise on topographical anatomy, and his description of the tactile corpuscles of the papillae of the skin. Merkel edited successive editions of Henle's Ground-plan of Anatomy. It has been asserted that sons-in-law make the best biographers, and Merkel's life of Henle has proved indispensable to the present writer.

Henle's fourth daughter, Emma, and his second son, Adolf, were born at Göttingen. During the seventies, three more of Henle's children—Karl, Sophie, and Elise—were married. Grandchildren added to his joys, except when death

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chose infancy as its untimely victim. But sunny countenances were the usual visitors to the patriarch's fireside. When trouble came to any members of the household, they instinctively turned to Henle, and the hand that might have been penning an immortal idea a moment ago, would be kindly stretched forth to comfort a child's distress. Fame never disarranged Henle's simplicity. Sitting at his desk until ten o'clock, teaching for the remainder of the morning and part of the afternoon, a post-prandial application to belles-lettres followed by devotion to science until supper-time, then smoking a cigar while his wife read a novel and his daughters busied themselves with needlework, and back to his desk again where he worked until midnight, finding his recreation in his musical and literary circles, his days flowed peacefully on, and for long periods he moved merely between his home and the anatomy building. The spring of Henle's life was stormy, but its winter was mild. Tranquility was the keynote of his venerable years.

During 1882, three of Henle's eminent friends, the novelist Auerbach, the chemist Wöhler, and the histologist Schwann, passed away. The old Henle immediately prepared a standard memoir of Theodor Schwann, the co-worker of his youth, living again through the stirring days when he and Schwann moved into one house and reconstructed biology. Henle received his diploma in 1832 and it was now 1882—a span of half a century. The fiftieth anniversary was on the fourth of April, and on that day glad outbursts of music were heard near Henle's home—the Göttingen militia's serenade; the chief burgomaster delivered the town's greetings, the students presented their teacher with a golden laurel wreath, and in the celebrations that followed, Henle saw before him some of the most distinguished scientists of Germany. It was the master's Jubilee, and his former pupils came from their academic chairs to honor him. Kölliker prepared a noble address, signed by great names, in which he said:

> You celebrate to-day the day on which just fifty years ago, you delivered your famous dissertation De membrana pupillari, and upon which you received your doctor's degree. This day is not only a day of honor for you, but a great joy for all who ever stood close to you. Permit us then, your one-time pupils and now your colleagues, to offer to you our sincere esteem and our gratitude.
>
> A worthy pupil and friend of Johannes Müller, you followed him first into the field of comparative anatomy, but only to soon go your own way. With full recognition that the work of Schleiden and

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Schwann, based upon the groundwork of Bichat, had to be upbuilt and reconstructed, you created your General Anatomy, a scientific work of the highest importance, which in truth was to become the keynote of your future work. Conspicuous from the beginning, through its abundance of facts and ideas, through the masterful discussion of the physiological activity of tissue on the ground of their anatomical structure, and through the careful and just valuation of previous works, this work will remain for all times, a paragon. With the complete understanding that physiology is the foundation of pathology, you erected for yourself in this field an indestructible monument by your Pathological Researches in which you foretold, with great keenness, the latest developments in the theory of epidemic diseases. Besides this, your Anthropological Lectures, and the Journal of Rational Medicine which was founded by you and Pfeufer and continued for more than two decades, also your Yearly Reports, bear brilliant testimony to your vigorous and fruitful activity.

The climax, however, of your achievements are your researches in the field of human anatomy, and it is here where your extraordinary talent shines triumphant, not only in the way your discoveries were made, but also the manner in which they were presented. In fact, your Handbook of Systematic Anatomy is recognized as the sole work of its kind, raising the ancient and supposedly final anatomical sciences to an unprecedented degree of perfection, which must serve as a foundation for all future builders.

The picture of your manifold and unusual labors would still remain incomplete, if we were to omit mention of your activity as an academic teacher, and in this field we, your pupils and colleagues, are competent judges. There was no one more eloquent, clearer in presentation, deeper in thought and conviction, and in these respects you will always be to us an unattainable example. Accept then, much-beloved and highly revered master, our sincerest thanks, for all that you have meant to science and to us! Accept our best wishes for the glorious event which you celebrate to-day, and permit us to give expressions to our hopes, that there may remain to you many years of great happiness and blessed work.

Of the numerous other addresses, the best remembered is the one from the medical faculty of Kiel, which began with the remark that their greeting was not an isolated word out of the large sum of gratitude which had been coming to him for the past fifty years, for physicians and research-workers without number owed to him their education and inspiration. The characteristic Festschrift, the university of Göttingen's commission to the sculptor Hartzer for a bust of Henle to stand in the vestibule of their anatomical building, the decorations from various states including the government of Prussia, were other tokens of esteem which marked this jubilee. Henle's alarm that he was being honored beyond his merits, combined with his naive pleasure at the constant stream of well-

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wishers and the ever-accumulating messages of congratulation, added to the sincerity and geniality of the celebration.

After the elaborate public entertainment was over, Henle's children and grandchildren gathered around him, and in their midst, decorated only with the "jocose order of the patriarch," he was most content. To this inner group a few chosen friends were invited, among them being Henle's illustrious pupil, Wilhelm Waldeyer, who has given us this exquisite picture:

> Another beautiful phase of his being was his love and highly-developed devotion to his family. Whoever had an opportunity of seeing him in the circle of his family, will never forget how well Henle understood to make his dear ones happy. It was then that his warm heart, his delightful sense of humor showed itself. I found him thus in the spring of 1882, when he afforded me the pleasure, after the official days of his Jubilee were over, of inviting me to a celebration in his most intimate family circle, and also a year later in Herrenalb, where he and his family were spending their vacation, and I was tramping through the Schwarzwald. These days will remain unforgotten; and as he was then unbroken, so he remained to the very end.

Unbroken but not unbowed, for the autumn of 1884 found Henle a sick man. Yet throughout the winter semester, even when the physical agony of intercostal neuralgia forced him to resort to morphine, that flashing eye and winning tone still captivated the student-youth of Göttingen. Not till the official vacation began, did he seek relief—but what can Baden-Baden do for a renal sarcoma with metastasis in the vertebral column? Henle re-discovered the kidneys, but his own kidneys killed him. Upon his death-bed he spoke cheerfully and consolingly to his wife and children to the end—the thirteenth of May, 1885.

On that day, the curtain descended upon a career of dramatic completeness, for it opened with a prison and ended with a jubilee. No longer would the students see their "old Jacob," and son-in-law Merkel was called from Königsberg to become the anatomist of Göttingen—and here, in his sacred hours, he enshrined in his book the imperishable name of Jacob Henle.

IX

CONTRIBUTIONS TO SCIENCE

Henle's history does not end with his death, for though the man is dead, his work endures. Henle's first contribution to science was his dissertation on the membrana pupillaris

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(1832), by which he increased our knowledge of the embryology of the eye. The organ of vision continued to attract Henle: he described the histology of the retina (1839), its anatomy (1864), the physiology of the lachrymal canal (1865), the fibres of the crystalline lens (1875), the construction of the lens (1878), and its development (1882). As a result of these studies, we have several eponyms. Within the palpebral conjunctiva, Henle found structures resembling lymph follicles which are now known as the trachoma glands of Henle, or the aggregated glands of Bruch. This discovery was responsible for an ophthalmological puzzle, for it is still undecided whether these glands are normal or pathologic. The lamina basalis which forms the inner boundary of the choroid is known both as Bruch's layer and as Henle's membrane. The zone of cone-fibres and rod-fibres in the region of the macula lutea, bears the name of Henle's fibrous layer. The retinal layers exclusive of the rod-and-cone layer are known as Brücke's tunica nervea or Henle's stratum nerveum. The masses on the cornea, near the border of Descemet's membrane, are Henle's warts. After witnessing an execution, Henle wrote "Experiments and Observations on a Decapitated Person" (1852), which states his discovery that the yellow spot contains no rods but cones only.

During Henle's early years in Berlin, the medical faculty was preparing the Encyclopedic Dictionary of the Medical Sciences, and Henle was commissioned to write the articles on albumin, olein, epidermis, epithelium, eructation, excreta, sepsis (1834), falx cerebri and cerebelli, fibro-cartilage, fibrin, fauces, fat, yawning, goose-flesh, gall-bladder (1835), vascular glands, sense of hearing (1836), hallucinations (1837). He wrote also for Froriep's Notices, Hufeland's Journal, Wiegmann's Archives, Casper's Weekly, Oken's Isis, and the English Magazine of Natural History, but most of his work during the Berlin period was published in the journal with which he was himself connected—Müller's *Archiv*. His contributions to these periodicals included his observations on the acqueductus vestibuli and cochlea (1834), Owen's trichina spiralis in human muscle (1835) musculus spinalis cervicis in man (1837), mucus and pus formation, extension of epithelium in the human body, the retention of memory in the special senses (1838), the microscopic elements of milk, the construction of glands (1839), the contractility of vessels, dropsy, and the structure and formation of the human hair (1840). The outer

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cellular layer of the inner root-sheath of the hair follicle, surrounding the layer of Huxley, is known as Henle's layer.

After the suave Humboldt succeeded in persuading the Prussian government that its institutions were safe even with the conspirator Henle out of prison, Henle produced his habilitation-thesis, Symbolae ad anatomiam villorum intestinalium imprimis eorum epithelii et vasorum lacteorum (1837). With this treatise the modern knowledge of the epithelial tissues begins, and the young man of twenty-eight was among the immortals. In these researches, although they were conducted with nothing better than a Schieck microscope, the investigator established names which have become permanent parts of histology, such as pavement epithelium and cylinder epithelium, and was the first to define columnar and ciliated epithelium, and the first to describe the stratum mucosum of the epidermis, and the intestinal epithelia. His pronouncement, in the following year, that "all free surfaces of the body, and all the inner surfaces of its tubes and canals, and all the walls of its cavities, are lined with epithelium," was one of the most momentous generalizations of the century, and it paved the way for the far-reaching cell-theory of Schleiden and Schwann, which in turn prepared the path for the Darwinian theory. Henle is the first author mentioned by Schwann, and on account of the fundamental importance of Schwann's work on the cell-theory—which, like Henle's researches on the epithelium, originated in the lodging-house at Number 66 Friedrichstrasse—we will quote some of Schwann's references from his "Microscopical Researches into the Accordance in the Structure and Growth of Animals and Plants" (1839):

> A very important advance was made in the year 1837, when an actual growth of the elementary particles of epithelium was proved to take place without vessels. Henle showed that the cells in the superficial layers of epithelium are much more expanded than those in the deeper strata, a fact which leaves scarcely any doubt as to their true plant-like—that is, non-vascular—growth.
>
> There is another observation of Henle's, which is opposed to the epithelium being regarded as a lifeless substance secreted from the organized tissue; I allude to the passage where he proves that the vibratile cilia, whose motion it is so difficult to explain by physical laws, stand upon little cylinders which are merely a modification of the epithelium.
>
> It often occurs that the tabular epithelial cells are not regularly hexagonal, but represent flat elongated stripes, a fact which has been observed by Henle in the epithelium of the vessels. The cells which

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are prolonged into cylinders constitute the other modification in the form of the epithelial cells. They were discovered by Henle in the intestinal mucous membrane.

With regard to the formation of the epithelial cells, Henle has already proved the rete Malpighii to consist of round nucleated cells, probably the young epidermal cells, and also that the diameter of the cells increases towards the outside, so that in the fetal pig he was enabled to trace the gradual transition of the cells of the rete Malpighii into those of the epidermis.

Henle's treatises on the Narcine, a new kind of electric ray (1834), on the Branchiobdella and on the explanation of the sexual organs of the Annelida and hermaphroditic snails (1835), on the Enchytraeus, a new annelid (1837), and on the larynx, with special consideration of the larynx of reptiles (1839) constitute his independent work in comparative anatomy. In the important monograph on the larynx—which aroused the enthusiasm of old Humboldt—Henle traced the development of the organ of voice from the simple cartilage-strip in the Proteus to the complex structure in higher animals, saying in the introduction:

As our knowledge regarding the development of the larynx and the significance of its individual parts is still very incomplete, and in fact, the origin and gradual development of the larynx in the embryos of the highest animals is so difficult to follow, I determined to undertake a comparative-anatomical research of this organ, in the hope of showing the various degrees of development in the different organisms, graduating from the lowest to the highest. In this sense, I have given a zootomical description of the larynx in the form of the story of its development.

It is one of the oddities of science that these words should have been written twenty years prior to the publication of the Origin of Species, and by a man who was never reconciled to Darwinisn.

All of Henle's work in comparative anatomy was accomplished under the influence of Johannes Müller, with whom he collaborated in the systematic description of the Plagiostomi. Müller, who was a great student of fish, already knew the Plagiostomi through his study of the Myxine and Petromyzon, while Henle was familiar with the subject on account of his Narcine investigation, and when a barrel of Sicilian fish was opened in the Berlin museum at the same time that a collection of Indian fishes arrived, both scientists found many interesting points to discuss, and decided to systematize and extend the data on sharks and rays. As the material in Berlin, although extensive, was inadequate for their purpose, they

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journeyed to Rotterdam and Leyden, and later to London, everywhere accumulating scientific friends and treasures. In London they became greatly attached to the Owen family, and while the distinguished Sir Richard painted Müller's portrait, Henle improved the German of Mrs. Owen—the cleverest of female diarists. After leaving England, the travelers separated in the interest of the investigation, Henle going to Frankfurt, and Müller proceeding to Paris.

When they met again in Berlin, both had numerous observations and discoveries to report, and prepared their manuscripts for the press. In order to insure the publisher against loss, the authors agreed to purchase twenty copies annually as long as a deficit remained. "The Systematic Description of the Plagiostomi" (1838-41), was certainly a splendid piece of research, but as the Plagiostomi didn't read it, and as few human beings did, and as the practical publisher demanded that the contract be fulfilled with scientific exactitude, Müller and Henle, in the course of years, possessed scores of copies of their mutual masterpiece.

During Henle's last year in Berlin, his "Pathological Researches" (1840) appeared. In the brilliant essay on fevers he dethroned the archaeus of Helmont and the sensitive soul of Stahl, and offered a rational explanation of elevated body-temperature. But the feature of the book was the essay on "Miasms and Contagia," which laid the foundation of the germ-theory of disease, as it contains the first clear statement, in modern terms, that infectious diseases are due to specific microörganisms. Henle said that if these organisms are invisible, it is not because of their extraordinary smallness, but because they differ so little from the tissues in which they are imbedded, that they remain unrecognizable. The predictions which Henle made in 1840, were fulfilled, more than forty years afterward, by his pupil, Robert Koch. When the stain was introduced into bacteriology, Henle was hailed as a prophet—but in the Berlin days, when Henle and Hirschwald met for the last time, the publisher complained that the entire edition of "Pathological Researches" was still on his hands.

After his removal to Zürich, Henle discovered the Demodex folliculorum (1841), the ubiquitous pimple-mite which presides over spoilt complexions. But as Henle mistook the rear end of the parasite for its head, he was not particularly proud when this acarus was mentioned, and although he

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later wrote on the gregarines, the parasites of invertebrates (1845), he was never completely at home in Johannes Müller's domain of zoology and comparative anatomy. As the master's welcoming and guiding hand was now lacking, Henle turned to a field where he had few compeers—human anatomy. In a communication to Schoell, he says:

With infinite joy, I now write my Handbook of General Anatomy. It is splendid to cast away a few old prejudices and to watch how here and there a light, or at least, the twilight, breaks through, and how a new principle substantiates itself in a newly foundled fact. And now I work faster than in the olden times when I had to run in to you every two hours or so, with a half page of my Contagia. You had to stand a great deal from me in those days, but I have profited much, and know, therefore, that you are not regretting it. I was, in those days, almost too modest, but I believed implicitly, that which to me appeared absolute and vital, must surely have already occurred to other sensible people. Now when in spite of all the mistrust against me, and in spite of my wish to agree with the majority, I daily find fresh confirmation of my opinions, and when I see how little effort is made to understand or refute them, I feel more comfortable and I learn to proceed without apprehension.

My book creates sensation enough, and the critics find two ways of dealing with it: some sing me all sorts of praise, but find this and that to be startling, and believe that this and that holds entirely too fast to need to be defended against my attacks; if we were to do so and so, then there would remain little that was certain. Others belittle me in the very beginning, and hold me up as a warning example why a theoretician should not treat of practical things, and then believing they have accomplished enough, they concede the details, step by step, or break their teeth on it. Only a few, young, sanguine, and still unoccupied people, gape with open mouths, and on these my hopes are centered.

Aside from its new facts, such as the demonstration of unstriped muscle in the endothelial coats of the lesser arteries, the broad conceptions and the new principles enunciated in Henle's "General Anatomy," made its publication the most important medical event of the year 1841. Bichat was surpassed, and science acclaimed a new master. "To us young medical men," wrote Kussmaul, "a new world opened up through Henle's General Anatomy. It holds its readers almost more by the vistas it suggests, than by what already exists. Curiosity drove me to read the book, and the impression which it made upon me I can only compare with which I received on reading Liebig's works, and I began, just as I did with the latter, to commit the vital parts of the contents to memory." Of the numerous encomiums which this work

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has received, none is more illuminating than the tribute of Walther Flemming, one of the greatest names in cytology, author of the aphorism, *Omnis nucleus e nucleo:*

> It was Henle, who in his researches and studies on epithelium, made the most important references to the cellular construction of animal tissue. How deeply he became absorbed in the general problem of the cell theory is plainly evident from the fact that two years after the publication of Schwann's book, he published his General Anatomy; and one may say that this contained the first real, rational tissue theory of the animal body, so comprehensive and many-sided, that it earned the admiration of the entire biological world. If I may use a paradox, it is not a work which can be accomplished in two years, and it shows that Henle occupied himself with animal tissue in the sense of the cell theory, long before it was proclaimed.

During his latter days in Zürich, Henle collaborated with Kölliker in the publication of a monograph on the Pacinian bodies (1844), and in this year appeared the first volume of Henle and Pfeufer's *Journal of Rational Medicine* (1844-69). The contents opened with Henle's belligerent manifesto on Medical Science and Empiricism, and early issues of the magazine contained his essays on hypertrophy and tumors through checked resorption, wherein he explained the relationship between the blood and lymph streams, and on tonus, cramp and paralysis of the bronchi and expectoration, which was valuable for its observations on the physiology and pathology of breathing, and for its demonstration of the contractility of the bronchi through the action of the smooth musculature. The journal grew in influence, and to later numbers Henle contributed his observations on cylindroma-siphonoma, a new genus of tumor (1845), on the absorption of narcotics through the lymphatics (1846), on blood analyses, on Hassall's corpuscles (1849), on the coracobrachialis muscle (1857), on the tissues of the suprarenals and hypophysis cerebri (1865). The *Journal of Rational Medicine* existed for twenty-five years, and upon the death of Pfeufer, Henle closed the magazine's career with the words: "If our successes were helpful, if our errors served as warnings, then the flag of Rational Medicine has not waved in vain."

Apart from his periodical editorship, Henle was the annual reviewer of medical progress, a task which was begun in Berlin, and extended through the Heidelberg period, far into the Göttingen times. These Yearly Reports were on the progress of physiology, pathology and pathological ana-

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tomy (1838-9), on pathology (1845-6), on histology (1844-8), and on general and special anatomy (1849-55). The anatomical reports were published in Canstatt's Yearly Reports until the publication passed into the hands of Virchow, and Henle then continued these annual summaries of anatomy in Henle and Meissner's Yearly Reports (1856-71). "One of Henle's most important activities," said Leyden, "were his Yearly Reports, a literary creation which ranks exceptionally high, and is practically the only one of its kind. These Yearly Reports were always looked forward to with great expectation."

Even as an annual reporter, Henle was too much alive to be tedious, and if his Yearly Reports were not as calmly indifferent as Hofman-Schwalbe's, they were far more readable and stimulating. To offer simply the bare facts, to abstract all the articles on a given subject and put down the data without interpretation or comment, to present the status of every topic with the routine impartiality of an index-catalog, did not accord with Henle's idea of what an annual report should be. He could not help becoming incensed at statements which he knew to be unwarranted, and work which he regarded as significant, aroused his enthusiasm. If certain points seemed dubious, Henle laid aside the pen, and his scalpel or microscope either confirmed or confuted the author he was reporting.

These reports became famous for their commentary, and it is said that toward spring, at which time they appeared, there was an annual uneasiness among authors, and they turned the pages with shaky fingers to see how they had passed the censorship of so keen a critic. "It is not of so much importance," said Henle, "to write up pathologico-anatomical facts; in this direction our report does not even pretend to be complete, as it does not comprise all the scattered and so-called interesting instances. On the other hand, I am endeavoring to group together those discoveries which promise to disclose facts regarding the nature and organic foundation of disease phenomena, as well as experiments which are made in order to bring the connection of the phenomena upon the path indicated by physiology. As there are not only facts to be taken into consideration, but also the mode of the connection, theory and polemic cannot be avoided." In the numerous tilts that ensued, Henle was not invariably the victor. Virchow maintained that connective-

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tissue contains fully-developed cells with all their attributes, while Henle insisted that only the nuclei were present, and that what Virchow mistook for complete cells were optical delusions. He wrote:

> These optical delusions bring to mind the kind of pictures, which were rather widely distributed after Napoleon's death. At first glance, one sees an urn, and over it a drooping willow tree, and between the two a low cypress; if, however, one looks at the white space which these three objects create, one recognizes the profile of the figure of Napoleon, and once we are accustomed to contemplate the white silhouette which surrounds the pictures, they themselves become meaningless. Virchow's connective tissue corpuscles are vacant spaces, surrounded by fibres or strata, which one overlooks or considers a homogenous mass when one becomes absorbed in contemplating the vacant places.

In this dispute, Henle went down beneath the lance of his junior, but the above-quoted paragraph is evidence that Jacob Henle was delightful even when he was wrong. It is due largely to these Yearly Reports that Henle's books are so rich in references to the history and literature of the medical sciences.

Henle's chief contribution to pathology was his "Handbook of Rational Pathology" (1846-53). It is the product of an intellectual revolutionist, and not only did it overthrow antiquated systems, but it brought forward certain speculations whose utility had not been fully established. To those who argued that we should cling to the old dead theories until the new ones proved to be of permanent value, Henle proposed the following parable:

> A pedant owned a nightingale for a long time, and had great pleasure in its song. Then the bird died. The pedant found the silence unpleasant, and went out to purchase another bird. There were but a few pilfered nests in the market, and the vendors did not know whether the eggs were fertile, or at least would not guarantee that male birds would hatch; then too, the brood would require much attention before they grew up to be singers. The pedant thought this to be too risky, and he went away saying that he would rather keep his dead nightingale. This was conservative, but to what purpose? That the care might be wasted on the young brood was possible, but that the dead nightingale would never sing was certain.

Written in a graceful and brilliant style, opening with the dictum, "The duty of the Physician is to prevent and to cure diseases," studded with such epigrams as "The day of the last hypothesis would be also the day of the last observation," and "An hypothesis which becomes dispossessed by new facts, dies an honorable death; and if it has already call-

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ed up for examination those truths by which it was annihilated, it deserves a monument of gratitude," laughing the medical devil out of existence and establishing rational concepts of disease, the Handbook of Rational Pathology created a sensation, and what made it of epochal importance was its cardinal principle: "The physiology of the sick and of the healthy are not different, physiology and pathology are one." As Walther Flemming said:

> There is no better testimonial of Henle's success than this: that the principles which he, as a pathologist, fought for, have become a part of us to such an extent that we forget there could ever have been an opposition. For who knows to-day much of the natural-philosophico-medical system, which was in vogue during Henle's youth? One has to question the elders, as the young have but little time to devote to the history of medicine. That the systems of those days are ancient and already belong to history, is largely due to Henle. His reform-cry, Rational Pathology and Physiology are identical, became the watchword of all true physicians.

Henle's anthropological lectures at Heidelberg were exceedingly popular, and were attended not only by students of all the faculties, but by such men as the historian Gervinus and the Swiss Gottfried Keller, one of the foremost lyrists and novelists in German literature. Henle first met Keller in Switzerland, and remarked, "It was all one whether a tame young bear or a poet had been sitting at the table with us, for outside of some inarticulate growling, we heard nothing else from him." After hearing Henle's anthropological lectures, Keller interwove their essence into his chief novel, *Der grune Heinrich*. In his old age, it gave Henle much pleasure to prepare his "Anthropological Lectures" (1876-80) for the press.

After his settlement in Göttingen, when Henle felt that the time had come for his main work, he undertook a complete re-examination of the human body, a labor which he completed after sixteen years of unremitting toil; his osteology (1855), was followed by syndesmology (1856), myology (1858), splanchnology (1862-66), and neurology (1871), these instalments comprising his three-volumed "Handbook of Systematic Anatomy" (1855-71), which was followed by an "Atlas" (1874-77), for use in the dissecting-room, and by a condensed presentation of the subject, "Ground-plan of Anatomy" (1880), later editions of which have been edited by Merkel. Upon the publication of the great textbook, Henle complained humorously that now he was compelled

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to teach according to Henle. The illustrations, whose number and excellence impelled universal admiration, were drawn by Henle himself, and the language of the text was classic. "Henle," said Flemming, "was an orator with his pen as well as in his academic chair." Henle advocated a neutral, common-to-all, Latin terminology in science, saying "There are other means of expression of love for the fatherland and mother-tongue, than the sacrifice of time and tongue which makes one say, instead of n., a., and v. cruralis, schenkelnerv, schenkelpulsader, and schenkelblutader." Henle wrote on the disadvantage of eponymic terms in anatomy, but his own name is found on the bones, muscles, vessels and viscera of the human body; examples, besides those already mentioned, are Henle's spine, Henle's fissures, Henle's ligament, and Henle's fenestrated membrane.

Special reference should be made to Henle's urogenital work. He discovered cylindric casts in the urine; pointed out that varicocele is almost invariably left-sided; described the expanded outer half of the Fallopian tube, known as Henle's ampulla; the portion of the uriniferous tubule, known as the canal of Henle; the granular mononuclear cells in the seminiferous tubules, known as Henle's cells; the fibrin formed by precipitating semen with water, known as Henle's fibrin; the remains of the gubernaculum surrounding the vas deferens and vessels of the spermatic cord, known as Henle's internal cremaster; and the striated muscular fibres encircling the prostatic and membranous urethra, known as Henle's sphincter. But his most interesting find in this field was the U-shaped turn of the uriniferous tubule which is formed by a descending and an ascending loop-tube, known everywhere as Henle's loop. Concerning this discovery, the fortunate Henle wrote one of his characteristic notes to Pfeufer:

> It is about time, my dear friend, that I inform you of the good fortune which has befallen me, of making a discovery in my old years, which is far more surprising and remarkable than any other heretofore made by me. Apart from the joy of having found something new in an organ a thousand times investigated and settled, I also enjoy the extraordinary satisfaction that my find is based on injection, and that the colleagues who credit me merely with the gift of the tongue, can no longer look down upon me from their injection-syringe.

Henle's medico-historical knowledge was extensive, and he was intimate with many scientists who made history in the nineteenth century, but he produced only three biographic memoirs: on Albrecht von Haller (1872), on Ernst Heinrich

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Weber (1878), and on Theodor Schwann (1882). In the year of his jubilee, Henle's scientific work was nearing its close, but in that year a man whom he had trained, and who was deeply influenced by his theory of contagion, electrified the world by his discovery of the tubercle bacillus. Forty years earlier, Henle vainly searched for microörganisms in typhoid cadavers, in smallpox material, and in the scales of scarlatina, but by his fixing and staining methods, Robert Koch substantiated his teacher's theories by demonstrating bacillus after bacillus.

Henle's last publication was appropriately in anatomy, a noteworthy monograph on the growth of the human nail and the horsehoof (1884). In sending a copy to Waldeyer, on the twenty-ninth of December, Henle wrote:

> Enclosed is the child of my ageing loins; it is a great pleasure for me to send you this, as it gives me an opportunity to renew our neglected correspondence, and to inquire as to the state of your health. I cannot say much for mine. Since the beginning of this semester, I worry along with a leftsided intercostal neuralgia, which I have been able to tame with morphium to the extent of being able to deliver my lectures. Besides the physical suffering, it also causes me great sorrow to find that it in no way conforms with my beautiful theory founded on the process of vena hemiazygos, as the exacerbations are evidently wholly independent of venous stagnations.. Under these conditions, the days of our external existence pass in quietude and monotony.

In the coming spring, the old scientist reached the end of his journey, but before he passed from the sight of men, he had bequeathed to us the true knowledge of epithelium, the rational outlook upon pathology, the germ-theory on which we have built the corner-stone of modern medicine, and the most comprehensive study of the human body that had yet appeared. *Sic itur ad astra, O Jacobus Henle!*

(*The end*)

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RADIUM AND ITS THERAPEUTIC VALUE

By A. H. Werner, M. D.

I. *The Chemistry of Radium.*
II. *From X-Ray to Radium.*
III. *The Isolation of Radium from Uranium Ore.*
IV *Characteristics of Radium.*
V. *Therapeutics of Radium.*
VI. *Balneology.*
VII. *Bactericidal Action.*

I—THE CHEMISTRY OF RADIUM.

It would seem that the extensive literature on the above subject, offered by many physicians of the highest standing, is sufficient proof that the question as to the value of radium as a therapeutic agent, should be answered in the affirmative.

The interest in this new addition to the amatura medica, is best proven by the fact that the American Medical Association has decided to appoint a committee to make a close investigation of the therapeutic value of radium, vide: The Journal of the American Medical Association, April 26, page 1243 (1919), thus endeavoring to protect the public from unscrupulous persons who claim radium to be a panacea for all ills.

When using a remedy such as radium, it is absolutely necessary to know its physical and physiological actions, so that we may be able to study cause and effect and to draw our conclusions. In the following I will give a brief history of radium and the conclusions to which I have come after many years of observation, using it alone as a therapeutic agent.

It is an interesting fact that before radium was known, the rays which are given off from same had been discovered. Vibrations were detected for which we had no explanation until 1898 when Madame Curie and her husband discovered and isolated this new element from which these vibrations emanate.

On investigation, it was proven that these vibrations or rays were not really rays such as the rays of light, which are vibrations of the ether of the universe. No, it was found that radium disintegrates by its own activity. It sprays out continually in the minutest particles, so that we can speak of a never-ending bombardment of its surroundings.

In this process of disintegration, we are able to measure the liberating force as a power of motion and heat, but the loss of weight which is caused by the above process is so minute that it cannot be estimated or proven by our most delicate scales. This may be explained by the fact that the disintegration is very slow and that the liberating power is enormous. It is estimated that in two thousand years, only fifty per cent. of a given quantity of radium would have been lost by this process of self-destruction.

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However, the liberating energy is so enormous, that it is easy to measure it and to prove its existence at any time. Here the difference is shown between molecules and atoms.

The chemist is able to divide all elements into their molecules, and again the molecules into atoms. But he can never even with all the forces of our earth, destroy one atom or divide it into its particles. The power which holds an atom together is inestimable. It is therefore logical that if such an atom breaks voluntarily, an enormous energy must be set free. It is this force of radium at which we marvel and which we admire.

The discovery of radium brought to the chemist beside the knowledge of the molecule and atom, a third factor, namely, that of the smallest particle of which the atom is composed, the electron.

Before radium was recognized as an element, the physicist reckoned with the size of the electron. In chemistry, however, as a foundation of all exact knowledge with regard to radium, it was first necessary that it be recognized and characterized as an element.

With the analysis of the pure radium-salts and the determination of its atomic weight, the time arrived that research replaced speculation. With the recognition that there are elements which disintegrate voluntarily and which set free atomic forces, the sphere of research in the transformation of elements from one into another was inaugurated. The teaching of the origin of the elements then became possible.

First of all, it seems that the atomic forces which are set free by the disintegration of the atoms are reminiscences of the period of youth of our planet many millions of years since.

As in chemistry we are unable to build up an atom, and cannot form expanding energy into an atom, it seems to me that all atomic energy, all the energy which is given off from radium, is different from all other energy. The theory however, that all the elements have their origin from one prime element and that related elements change into each other has received a new foundation. If we were capable of proving that there is an interchanging action between the chemical transactions, the sum of which we indicate as vital processes and that atomic energy of radium, it would be of fundamental importance.

No man of science today will deny that it is not at all unlikely that some day new, at the present time, unknown forces of motion will be discovered which today are observed exclusively in the living cell and organism. Therefore, every newly discovered

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principle of motion and vibration must be examined so that its value with regard to the vital chemical processes may be determined. The examination of radium with regard to its medical action, was based originally upon this fact.

II—FROM X-RAY TO RADIUM.

Radium rays today are obsolete. We now teach that the radium disintegrates, in so far as different kinds of particles scintillate and spray forth. These particles were formerly called alpha and beta rays. The first type is electro-positive and the second electro-negative.

Through the ascertaining of these peculiarities, the double nature of the radium particles was discovered. However there is a third energy of the nature of Roentgen rays present and these are real rays, not particles. They are the waves which are created by and through the electro-negative and scintillating rain or bombardment of the alpha and beta particle, real waves of the ether of the universe, such as the rays of light, except that they are more penetrating.

The question then automatically arises: How do we recognize which are rays or waves and which are only apparently rays and in reality corpuscles?

Let us imagine that we have a stream of very fine steel particles, and that these particles are forced through a very small opening, falling upon a level plate. To the right or left we place a fairly large magnet, which attracts each particle of steel during its fall and therefore detracts from its direct vertical line of falling so that they would lie as they are attracted towards the region of the magnet. We say that they are attracted to the magnetic field. If we transfer this picture of the steel particles to the very minute particles of radium, we have a performance which throws light upon the nature of this stream of corpuscles, i. e., as to whether they are really corpuscles or a real wave by which only the movement of one particle is transferred to the one lying next to it. All that is attracted to the magnetic field is a kind of particle and all which is not disturbed by the magnetic field, is real wave or ray. As nearly all bodies have electrical peculiarities of weaker or stronger type, this process of determination in the magnetic field is used for all matter in which the question of attraction of corpuscles in the magnetic field is obtainable.

For the understanding of radio-active rays, it is sufficient to know that we have a method which enables us to differentiate

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between rays and particles. However, in the triple radium rays, the greatest factor of differentiation lies in their power of penetrating. Therefore we have here some indication of the intimate relationship between Roentgen and Radium-rays.

The relationship is partly objective and partly of an historical nature. The most surprising factor in the discovery of Roentgen was the penetrating power of the X-Rays. The surprise was intense because in the scientific world, there was nothing with which it could be compared except the ether waves which we call light. If the deeply penetrating rays of radium had been discovered first, and if we had obtained with same, photographs by inter-position of plates, the sensational character of the discovery of Roentgen, viz.: the power of penetration would have held its prime position in the imagination of mankind and the whole world.

If a ray of light strikes a thin sheet of black paper or a thin metal sheet or in short, any opaque body and does not pass through the substance, this is an indication that the vibrations which are represented by the rays of light, end upon the sheet or body. We say the ray has been absorbed, it is no longer visible at the other side of the sheet. The presence of a penetrating ray can be proven on the other side of the plate or sheet in many ways. It may be visible to the human eye, it may alter the photographic plate or it may illuminate a crystal of peculiar type.

The Roentgen-Rays were discovered in a similar way. They were studied in the vacuum tube. These are the so-called cathode rays. They are strongly fluorescent and develop by the passage of an electric current through the vacuum space. It was observed that a crystal formed from a rare combination of metals (barium-platino-cyanide) and which was present in the experimental laboratory, was suddenly illuminated although it had been quite by accident enveloped in a sheet of black paper.

With the illumination of the crystal, it occurred to the observers that outside of the X-Ray tube, there must be rays which are capable of illuminating many minerals and that these rays were stronger and more penetrating than the rays of light.

An immediate exposure of a human hand which was put between the tube and a fluoroscope screen, gave to medical science, the last and greatest discovery of the nineteenth century.

The Roentgen rays are real rays because they are not deflected in the magnetic field. Nevertheless, they cannot be reflected in a certain angle from a reflecting surface, therefore, they must obey different laws than the rays of light, which to us are the real waves of the universe.

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In the beginning, we were under the impression that the Roentgen-Rays and the gamma-rays of radium, were identical. However, it must be mentioned that the penetrating power is vastly different. It is quite possible that in the future, the difference between these two rays will be more clearly established and experimentally proven.

The historical transition from the X-Ray to the Radium rays is of still a different nature. It leads us as do the history and origin of all great discoveries to quite a number of false deductions and conceptions. In the vacuum tube, we found those deeply penetrating rays with which it was possible to take photographs through black paper and metal sheets. Then the thought arose that other fluorescent materials might possess similar penetrating rays.

The most celebrated scientist and investigator in the domain of fluorescent phenomena is Becquerel. He had for many years studied and investigated all those materials which possess in various degrees, the faculty of self-illumination. He studied all materials which we indicate as fluorescent and phosphorescent.

The most important group of fluorescent material seemed to be in those compounds which had a uranium element. He then found it to be a fact that the uranium as nature gave it to us, viz.: pitchblende, gave forth rays which had a much more penetrating power than the rays of light.

If a piece of pitchblend ore is packed or covered with black paper, it nevertheless will act upon a photographic plate and if exposed long enough, photographs itself by its own light. However, Becquerel discovered that all these phenomena had nothing to do with phosphorescence and fluorescence.

Fluorescence is nothing more nor less than the giving off of light which has been previously absorbed. A fluorescent material emits light only when it has been previously exposed to light. It absorbs the rays of light and gives them off again in the dark. However, with uranium, Becquerel took photographs whether it had been exposed to the light previously or not.

The whole assumption that the fluorescence phenomena were related or identical with those powerful penetrating rays given off by uranium, was proven erroneous. The French scientist became unfaithful to his hypothesis which had presented him with these powerful rays, because he realized that in the coming years, science and research would have to work with what I will call the "Becquerel Rays."

Becquerel was indefatigable in his research work and it is

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to him that we have to look for the discovery of the alpha and beta rays in uranium ore and the physical peculiarities of the same.

The discovery of the gamma rays was reserved until the time when we were in possession of the pure radium salts.

They were discovered at the beginning of the twentieth century by Villard. The weak uranium rays were overlooked by this otherwise exact and eminent physicist. As a whole Becquerel has done the work which was possible with our physical methods, and this work was done during the first two years which followed the discovery of Roentgen.

In Becquerel's laboratory, Madame Curie and her husband had the audacious idea and set for themselves the great problem of isolating the material which was the bearer of the Becquerel rays. If ever it could be said that a set problem was part of a discovery, it was the case here. Madame Curie's invention of isolating radium was in itself a discovery, so that we have here an invention and a discovery at the same time. She has not only increased our understanding but our knowledge also.

With the observation that pitchblende ore from different sources showed a different strength and activity of Becquerel-rays, the observation was also made that uranium from one and the same pitchblende ore in all its different salts showed the same activity and strength calculated by the same amount of uranium in those various salts.

Having recognized this fact, Madame Curie set herself the above problem, i. e. to find a new element which she was happy in solving in a comparatively short time.

The success of Madame Curie in the History of Natural Science, must interest all those who for one reason or another follow the intellectual phenomena of woman-kind. Especially at the present time, this remarkable woman stands out like a pillar of light. For her great services, the French Government has made her a commander of the Legion of Honor as a sign of gratitude for the restoration to full health of many a French and Allied soldier who became victims of rheumatism and kindred diseases during the war.

The description of how Madame Curie succeeded in the isolation of radium and how today all radium production is achieved, is absolutely essential for the understanding of the once so dark and today so well known sphere of radium research.

(To be continued)

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Sexology

Continuing the
AMERICAN JOURNAL OF UROLOGY AND SEXOLOGY

THE WEAKER SEX?

By the Rev. A. E. Whatham

What was the actual origin of the term "The Weaker Sex," as applied to woman, that is to say, what it originally signified, may be a matter of dispute, but there can be no dispute that in the sense of being able to get her own way with a man, generally speaking, a woman is not the weaker sex, but, by a long way the stronger sex.

Of course it is obvious to anyone who thinks, what is here meant by woman being the stronger sex. She is the natural attraction and stimulus to man's strongest desire—the gratification of his sexual appetite. When Dr. Nichols says that there are women "whose strong sensual natures have a magnetic power to inflame the desires of those who come near them," when he adds that "they can charm like serpents; throwing off magnetic currents, which come from and act upon the amative nature," and that "it requires certain force of character and strength of resolution to resist this fascination of the senses," he misleads his readers as much as he informs them. The undoubted truth which he here emphasizes is that there are exceptional women so sensual that they emit unusually strong currents of sex-magnetism; the equally undoubted truth which by his sole special emphasis he somewhat covers up, if, indeed, he does not entirely cover it up, is that all normal women emit currents of sex magnetism without in the slightest degree possessing sensual natures.

In fact, where a woman does not emit this current of attraction it were far better that she should remain forever unmarried by whatever method she may choose, for her marriage would only bring untold suffering to herself, and equally untold suffering to the man she might marry, except he should be as much an abnormal male as she would be an abnormal female. A woman was meant by her Creator to emit from her person currents of sex magnetism, and one who does not do so is just as much an abnormal female as the female referred to by Dr.

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Nichols who throws off from her person sensualized currents of sex-magnetism (Marriage, p. 249).

Returning to the phrase, "The Weaker Sex." One of its meanings, if not, indeed, its primary meaning, is that a woman has not as much will power as a man, owing to which, should he press her to take part in an act of free-love with him, she, if possessed of a strong liking for him, will usually yield to his persuasion. It is this view of the matter that has originated the term "betrayed" as signifying an ordinary seduction. The man, the stronger character of the two, has practically taken advantage of the weaker, but more lovingly confiding, nature of the woman, to cause her downfall.

It is this view of the matter which is signified in the Biblical words, "The way of a man with a maid" (Prov. 30:19). Here the woman is supposed to be animated with a stronger desire for a man's approach, than the man possesses, for the approach of a woman, the woman in the meantime possessing a weaker will in such matters than the man, is by the man put under a sort of spell in which she is more or less robbed of her virtue. This is the commonly accepted view of an ordinary seduction. It is the betrayal of a more or less weak woman by a more or less strong man, owing to which, when a serious result happens from the assumed betrayal, the blame usually falls on the man, the sympathy usually is given to the woman. He is a villainous brute, she a poor innocent creature.

In a former paper in this periodical, "The Seducer in Seduction?" we showed that such a view as the above is absolutely erroneous when expressed in the case of an ordinary seduction. In such a seduction, not in the case of rape, which is entirely another matter, we said that the woman was more the enticer to the end sought than the man, although we then rested satisfied with characterizing an ordinary case of fornication, a *mutual* seduction. It is our object in the present article to justify the former conclusion, viz, that the woman is usually the enticer in the case of an ordinary seduction, and we purpose doing this by proving that here it is the woman who is the stronger and not the weaker sex as it is commonly supposed.

We begin by asserting what we have repeatedly claimed in many of our previous articles, that usually woman is not as erotically amorous as man. We are perfectly aware that this is a much disputed point which many eminent writers on the subject think is still unsettled (Northcote-Christianity and Sex Problems, p. 118). The Bible views women as more under the

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dominance of their sexual passions than are men (Gen. 3:16), a thought which underlies the words, "The way of a man with a maid," for it is here implied that a man can play upon the amorous passions of a woman always in a state to be played upon.

That there are some women of this character is a fact, a case coming under my own personal experience of a highly qualified hospital nurse who told me that in coming near a man she always felt more or less amorously aroused, but especially if he touched her, she then experiencing a warm flush running through her.

Such women, we are thankful to say, are rare, indeed, usually in their relations with men women are not moved by direct amorous feelings, but chiefly by various other causes, several of which we have elsewhere described. One of these causes we are going to further examine—the desire of most women to captivate some man over whom she may rule as queen. This was one of the said causes which we gave in our article on the "Social Evil," published July, 1917 (A. J. U., p. 298), and in the Over-Seas Daily Mail for Nov., 1920, our contention made three years previously was indirectly confirmed by a lady writer, Mary Isabel Fisk.

Writing under the heading, "A Woman on Feminine Love," she begins her article with the statement, "What every woman wants more than anything else in the world is absolute dominion over one man," and then proceeds as follows: "There is a peculiar vampirish trend in feminine love which takes the form of demanding the entire possession of the creature upon whom the affections have been fastened. Every woman wants to feel that no matter what his occupation—be it the most engrossing business or merely a game of golf—she is ever the compelling note at the back of her man's head. He must not forget her for a single instant, and he must be regretfully conscious that nothing is quite satisfactory lacking the saving grace of her presence. And she requires to be assured of this. She believes that in hoarding her perpetual recollection he holds a talisman rendering him immune against the attractions or blandishments of all other women."

After describing a man's mind as "a number of compartments each sealed from the other and docketed as to contents. While he is in one he shuts out everything pertaining to the other," she says, "A woman has not this capacity of detachment . . . . she is always sub-consciously aware of the One. The retentive quality is the dominating characteristic of

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woman. It is at once her greatest strength and her greatest weakness—she cannot bear to let go . . . . A man likes to do a thing, have done with it, and consign all memory to oblivion—to wipe the slate clear and be ready for something new. It is this instinct which impels men to sin and—forget. Woman, on the contrary, clings morbidly to the recollection of her slightest indiscretion and bedews the thought with gallons of impotent, and not always contrite, tears. She rakes over and over the dead leaves in her heart, hoping to find something sufficiently warm and green into which she can instill fresh life by her very insistence. Alas, poor woman, how she hates to admit the finality of anything."

We have quoted most of what this lady writer had to say on feminine love, because while we are not prepared to agree with all of what she has written, with most of it we do agree, and all of it is worth thinking about. We emphatically agree with what she says about every woman desiring to have complete dominance over one man, a dominance to be acknowledged by him in the way, and in that way only, in which she desires him to acknowledge it. No more forcible picture of this dominance of woman over man has ever been painted than in Tolstoi's "Anna Karenina." If Mary Isabel Fisk is to be credited, what she says practically is that every woman desires to be an Anna Karenina, and here she is undoubtedly correct, for no such complete "boss" ever existed as woman when she is able to exact her will where she has the power and opportunity to exact it. We intend to show the truth of this statement in a future article to be entitled, "Sex Antagonism," here we desire to touch only this subject so far as it illustrates our present contention, which is that woman is by far the stronger sex by will power, and that she only fails to rule absolutely over all men and in all things anywhere and everywhere because of her muscular inferiority to the male of her species. As it is, by subtlety she rules him as much as she can, and everything else anywhere and at all times whenever she can, by the same method, or openly if possible.

What we have so far said may prompt a reader to assume that the present writer does not believe in the reality of the much vaunted female docility, that lovable and retiring demeanor which is thought to be the outcome of a natural and enviable modesty peculiar to women. The reader so assuming would be absolutely correct, for the writer does not believe in the existence of any such quality as belonging naturally to women. Modesty is not a

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natural but an artificial instinct with women, originating solely in the selfish prohibition put upon their free action by men for their own particular purpose. Modesty is desirable in both men and women. Mr. Northcote unwittingly confirms this conclusion when referring to the controversy between "the married women and the free-loving women which St. Paul attempted to settle (I Cor. II. 2-16). He says, "The veil was the symbol of conjugal fidelity in the matron, and generally of modesty in women. The hetairae, the party standing for female emancipation, regarded unfavorably the assumption of the veil by women. They probably, and with some show of reason, claimed to be the female leaders in education and progress; condemned the seemingly useless strictness of the moral party, and twitted them with the veil as a badge of servitude" (ib., p. 374).

These said matrons, therefore, had resisted this attempted emancipation that they might safeguard their marital fidelity in the eyes of the men who practically owned them, for, it must be borne in mind, it was women only who were required to wear a symbol of their conjugal purity and not the men. Consequently, the action of these matrons was not prompted by a naturally inherent modesty, but by the long practised custom, now almost become an instinct, with women, of pleasing the master-man, who by no means was equally anxious to please women with his conjugal purity, although this obligation was as much his as theirs. However, the entire character of that modesty which men have come to believe is or should be a natural attribute of woman, but which is the direct outcome of masculine usurpation of rights which belong equally to the woman as to the man, is undergoing a radical reconstruction. While this reconstruction in its outward activities is new, the desire, nay, indeed, the effort itself to achieve it is by no means new, for from time immemorial woman has been educating herself to resist what she always subconsciously, if, indeed it was not consciously, felt, was an unjust subjugation of her personality to the personality of the man.

It is the long training of this effort on the part of the woman to get *equal* with the man in the matter of the free expression and action in one's own personality that has enabled woman in many ways, especially in the matter of sex-attraction, to become the stronger instead of, as it is commonly assumed, the weaker sex. Man is more strongly influenced through his amative passions than woman. In the evolution of animal life it was meant to be so, for male amativeness naturally emphasizes itself in one centre only, the personal gratification of the sexual appetite. With

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the female it is entirely different, the instinct of the desire for and the needs of the offspring, has with her much greater force than the gratification of any mere sex appetite.

This being so, it is easily seen that in the circumstances which have given rise to the saying, "The way of a man with a maid," the maid is much more capable of calculating the cost in the responsibility she is likely to bring upon herself by permitting the man to gratify his strong desire with and through her. It is these consequences in the responsibility which alone the maid is likely to bear, when added to the two facts that she is not so carried away by amative desire as is the man, and that she instinctively knows herself to be more of a sex attraction to the man than the man is to her, that has given the woman a much stronger will in the case of an ordinary seduction than the man possesses, so that the phrase, "The Weaker Sex," as applied to women in such cases is founded on a fallacy.

When Mary Isabel Fisk wrote, "What every woman wants more than anything else in the world is absolute dominion over one man," she was emphasizing a fact without attempting to explain its origin. In fact, we somewhat doubt whether she was aware of its origin, for had she been so she would scarcely have added the statement that "There is a peculiar vampirish trend in feminine love which takes the form of demanding entire possession of the creature upon whom the affections have been fastened." The last word, "fastened," lends an added misunderstanding of the entire matter as expressed in the foregoing sentence. "Vampirish" and "fastened," seem to suggest a vampire fastening its teeth in the creature it pursues to its destruction. The absolute dominion over a man which every woman does undoubtedly covet is not at all the outcome of any vampirish instinct, but the direct outcome of the woman's maternal instinct.

Every woman wants a man from exactly the same standpoint that she wants a baby. She wants something which is absolutely her own to love and to cherish, and, we must not neglect to add, to command, otherwise, to boss. The usual married woman thinks that her husband is no more than an overgrown baby, everything he does being done so much better had she done it herself, or if he had only consulted her about it before undertaking it.

"The worst of men," said a pretty widow recently, "is that they are such babies," and she gave as one reason for their being so, that they "cannot bear to hear the truth from women on any subject concerning the sexes." She added, "No woman can hope

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to keep her lover or her husband unless she resorts to all sorts of ruses and artifices."

Now this particular woman uttered what every woman feels because woman and not man is the great egoist in *homo sapiens.* Said Mrs. Carrie C. Catt, "Woman's influence would have so leavened world politics there would have been no war;" "men have run the world for 2,000 years with no very great success," said Mrs. Helen R. Robinson;" "only women can really reconstruct the world," added Lady Astor. (Is Woman's Vote Wasted?—Hearst's, Nov., 1920).

The women behind the great feminine movement today think that it is woman's genius that will save civilization. This fact alone shows the absurdity of viewing woman as constituting "The Weaker Sex." She has the superiority over man in nerve assumption if not in nerve force, and if she had only the superiority over man in muscular force, man would be compelled to stay home and mind the baby while woman went out to do the work of the world. We are neither joking nor romancing, but speaking what we conceive to be sober truth. Woman's attitude as here sketched is regrettable, but it is the outcome of man's foolish notion of viewing her as "The Weaker Sex."

The Nose and Sex

Fliess, in 1897, cured cases of dysmenorrhea by applying cocain to the nose, thus demonstrating that the nose possesses genital spots. Later he employed epinephrin, trichloracetic acid, the galvanic cautery and bipolar electricity. Soon after Fliess, J. N. Mackenzie contributed to the Johns Hopkins Hospital Bulletin a paper on the physiological and pathological relations between the nose and the sexual apparatus. This curious relationship between the nose and the genitalia attracted the attention of physicians in all countries, and in 1912, Seifert referred to 296 articles that had been written on the subject. Emil Mayer, in 1914, reported a series of 93 cases treated by him in conjunction with Joseph Brettauer, in which menthol, cocain and caustics were employed.

Ross Hall Skillern, in his volume on "The Catarrhal and Suppurative Diseases of the Accessory Sinuses of the Nose," just published by Lippincott, says on page 73: "Inflammation of the sinuses often exercises a marked influence over the sexual function. In ordinary cases there is a marked deterioration, while in severe cases it may be totally abolished."

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During our editorship of the Medical Review of Reviews we published Marvin Pechner's report of 22 cases of the intranasal treatment of dysmenorrhea. Dr. Pechner discussed the most practical phase of the fascinating riddle—the relief of painful menstruation by the application of an alkaloid to the anterior end of the lower turbinate and the tuberculum septi. But the problem has other angles, and we now invite our readers to discuss these aspects:

Menstruation from the nose.
Nose-bleeds during puberty.
Parosmia during the catamenial period.
Nasal catarrh at the climacteric.
Lack of nasal secretion in the habitual masturbator.

Beware of Vamp Patients

Dr. Paulus A. Irving's presidential address before the Medical Society of Virginia, on "Back to the Old Standard of Ethics," is replete with the most venerable platitudes in the world, such as "Do unto others as you would that they should do unto you," "Uphold the honor and dignity of your profession," "Mother! It is the sweetest name that can pass the lips of man," etc., etc.

But President Irving handsomely redeems himself by one bold act of striking originality. He is perhaps the only physician (since the days of Hippocrates), who has possessed sufficient courage to warn his colleagues against the sybaritic females who come in the guise of patients, but seek pleasure as well as prescriptions. Dr. Irving's counsel must be given in his own language:

Let me caution and warn you not to yield to the intrigues and designs of any voluptuous woman, especially if she is a patient. It may be the weakness of the moment and you should not take advantage of this weakness. She may be the wife or daughter of one who has faith in your honor and who has trusted you to enter his home, and she may be one whom you should protect rather than disgrace. Should you yield, you will never cease to regret it as long as you live, whether it ends in harm or not. It will embarrass you in a business way and you will forever have a guilty conscience, unless it is already seared by often repeated seances of such a life. Nothing will so lower you in your own estimation or that of your friends, as leading the life of a roue. This always gets out in time and will follow you wherever you go.

Surplus of Marriageable Women

Christmas is supposed to be the day of good-will to men, but last Christmas there was good-will on earth neither to man nor woman. In the Christmas issue of the Journal American Medical Association, the Vienna Correspondent wrote:

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The census of population taken Jan. 31, 1920, shows that the number of females has markedly increased, both absolutely and relatively, and in all age groups. There are 1,087 females for every thousand males in the whole of Austria, but for Vienna alone the figures are 1,163 to 1,000, an increase of seventy-seven males as compared to 1910. But if we take into consideration only those persons classed as of a marriageable age—all unmarried females or males over 19 years—we get quite a different aspect. In Vienna we find 1,413 females to 1,000 males at present, whereas ten years ago it was 1,227 to 1,000. In the rural districts the picture is not so appalling, but even there the ratio is never under 1,100 to 1,000, meaning that fully one-tenth of the females cannot hope to marry. Very striking is the change in the industrial and mining districts of our country. While in 1910 there was in these places a distinct surplus of males, now the females outnumber their mates by from 42 to 117 per thousand. In the purely agricultural districts the difference is not so pronounced. Even in peace times there was an excess of females, 1,153 to 1,000, which has risen to 1,262 to 1,000.

Poor Austria! it lacks almost everything—its only surplus is in women of marriageable age. What poignant tragedy lies concealed behind these statistics! If a Relief Committee, headed by such sexologists as Sigmund Freud, Havelock Ellis and Iwan Bloch, could be appointed to offer suggestions for the amelioration—but the Code of Conventional Morality abruptly interposes with the dictum: Nothing can be done, and the subject must not even be discussed.

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After Office Hours

By Gorham B. Munson

The Dramas of Eugene O'Neill

"The American Spirit may be figured as petitioning the Muses for twelve novelists, ten poets, and eight dramatists, to be delivered at the earliest possible moment," wrote John Macy some time back. One American dramatist has so far been delivered: Eugene O'Neill. O'Neill puts courage, discernment, poetry, tension and rhythm into his plays. It is not at all extravagant to proclaim him a genius whose creations will be acted on many a foreign stage and whose books will go into the libraries of the future along with Strindberg, Schnitzler and Synge. For he has conquered and is extending his conquest of a very definite place in dramatic literature.

Very lately the Provincetown Players have shown two new plays from O'Neill's pen. *Emperor Jones,* sanctioned by students of psychoanalysis as a true exploration of a negro's unconscious, was put on at their little theatre for two weeks originally; it ran instead for seven weeks on Macdougal Street and was then transferred to Broadway for special matinees. Played on a revolving stage, with scarcely any intermission between its eight scenes, it might almost drive its audience into emotional insensibility, so close does it approach the limit of emotional stress. I know of no other play in which terror is so terrifically embodied. The other play, *Diff'rent,* also had its original run extended. In this play the grewsome results to human happiness of that family skeleton of American life, the Puritan code, are mercilessly utilized by an artist. Life, passionate, sweet, bulging, irresistible, collides with a rigid harsh and mis-directed code. The shattering of minds, bodies and families through the succeeding thirty years is the tragic outcome. Both plays, note, give up an adherence to strict dramatic technique in favor of an allegiance to the requirements of aesthetic form: hence, their living power.

The Provincetown Players, by giving O'Neill a repeated chance in the last six seasons to exhibit, have made a most thrilling contribution to the American theatre. They will always be remembered and thanked for that.

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VOL. 28, NO. 3

MEDICAL LI

Radium

By A. H. Werner, M. D.

Descartes

By Victor Robinson, M. D.

Sex Antagonism

By Rev. A. E. Whatham

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(*Established* 1851)

Edited by VICTOR ROBINSON, M. D.

VOLUME 28 NUMBER 3 | MARCH 1921 | NUMBER SIX OF NEW SERIES

RADIUM AND ITS THERAPEUTIC VALUE

By A. H. Werner, M. D.

I. *The Chemistry of Radium.*
II. *From X-Ray to Radium.*
III. *The Isolation of Radium from Uranium Ore.*
IV. *Characteristics of Radium.*
V. *Therapeutics of Radium.*
VI. *Balneology.*
VII. *Bactericidal Action.*

III—THE ISOLATION OF RADIUM FROM URANIUM ORE.

The discovery of radium occurred, as have the greatest number of our valuable materials, because it existed in the mines of our planet. The element to which radium is most closely related, is uranium. It is a pitchblende which is an oxide combination of uranium, that is found in the mines. It is not an accident or coincidence that radium and uranium are found together. They belong to each other not only because of their similarity in character, but also because of their common origin. Science has even given us an explanation as to why such a large quantity of uranium and such a small quantity of radium are found. We get the best picture of this cohesion when we consider the way in which our knowledge was improved and enlarged so that the pure isolation of radium was possible.

Becquerel had proven his rays in connection with the uranium compounds. He also realized that it was this well-known element, to which the peculiar rays belong, and that not one uranium salt gives off stronger rays than another, for instance the nitrate more than the muriate. From this fact, it was recognized that it was the action of the atoms and not of he molecules which must be held responsible for the phenomenon.

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For the analysis of the Becquerel-rays the electroscopic method was used. This is the most ideal measure-method for the recognition and determination of the minutest quantity of matter.

As this method of Becquerel was already so well developed the discovery could not fail to show that the pitchblende or uranium of different origin was of different strength and activity.

With this definite observation, the conception that the Becquerel rays were a function of the atom of uranium had to fall. Rather it was proven that the rays came from a different and very efficacious material. All this was only a result of ever increasing and never ceasing scientific investigations.

But to reach the goal, namely, the problem of the separation of the pure, very active and still unknown material, it was necessary that some one with great talent and love for research and who was versed in this line of work should take it up.

The method by which Madame Curie produced pure radium salt out of pitchblende shows that although we have a never-erring guide in the electroscopic method, difficulties had to be overcome which were far ahead of the common and well known chemical methods of that time.

The pitchblende found in Joachimsthal, Bohemia, proved to be the best material for the experiments as it was electroscopically three times as strong as could have been assumed from the amount of uranium present.

The pitchblende is treated in the following way: it is first broken up into powder form and then baked; after this it is treated with sulphuric acid, the acid dissolving the uranium and an insoluble remnant being formed.

This residue was at that time considered a by-product and of but little value. Today it represents the most valuable part of the ore. It proved to be electroscopically more active than the uranium. Its activity is indeed exactly four and one-half times greater than that of uranium. This residue consists mostly of the insoluble salts of barium sulphate, lead and other rare ores. The radium is present in the form of radium sulphate and is similar in all its relations to barium sulphate.

By treating these salts with sodium carbonate and heat, they can be changed into carbonates and then by treating them with hydrochloric acid hydrochlorides may be produced.

By using this method in such a way as to produce barium chloride, we have a salt which is sixty times more active than uranium. This strongly radio-active barium salt is obtained in 0.8 per cent. from the residue of the pitchblende, therefore from

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a thousand kilograms residue of pitchblende, we obtain eight kilograms of barium-chloride.

After having produced the concentrated end product, the real and difficult task of isolation began. Only the very ancient chemical method of fractional crystallization was used to isolate the pure salt of radium chloride. This is somewhat more difficult to dissolve than barium-chloride but this little difference was sufficient for Madame Curie to prove that she had discovered a new element.

Later on, this method was improved upon and instead of using hydro-chlorate, the bromo-hydrogen salt of radium was produced. Through this process fewer crystallizations were required. For this reason radium bromide is the most frequent form in which the pure radium is made today.

The quantity of radium chloride which Madame Curie succeeded in isolating, was only a little more than three grains, to be exact 0.25 gram. With this quantity she had to prove her discovery. As during the next decennium, radium salts were produced in quantities of grams, the production of the pure radium element was possible (1910). It was obtained as a metal from the radium salts. It has a metallic glimmer but shows signs of external disintegration.

With the pure radium compounds, it was possible to make the great chemical discovery that one element can be transformed into another.

Radium gives off a low seething gas which is called emanation, and which must be looked upon as the first step in the metamorphosis of radium. This emanation decomposes without external assistance and through this process of decomposition, helium is produced. This discovery was made by Ramsay and Soddy. The exact methods of spectral analysis gave science this important information.

At this point the transition and transmutation of one element into another, was proven. We are now able to follow the resolution of the atom just as distinctly as we followed the resolution of the molecule. A new experimental atom-chemistry was inaugurated and observation and speculation began in an absolutely new form.

IV—DEMONSTRABLE CHARACTERISTICS OF RADIUM.

Substances which are radio-active, show characteristics which differentiate them from all other material. As we are

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able to demonstrate these peculiar characteristics, some of which are easily visible and others can be demonstrated with facility, we must consider the teachings of radium as a readily comprehensive branch of science. The difficulty of having to work with very small quantities, is compensated and equalized by the fact that we have methods to prove these characteristics exactly and ad infinitum. We have already seen that the discoveries in the sphere of rays were only possible through the electroscopic method.

A knitting needle, is erected upon a foundation of amber which is an excellent isolator and non-conductor of electricity. The upper point is provided with a head formed of sealing wax, then two very thin platinum, gold or aluminum leaves are fastened to their upper ends in such a way that they can move like a joint and are able to spread out from the rod.

Such an improvised instrument can be charged with negative or positive electricity by the simple method of rubbing a stick of vulcanized rubber, a glass rod or a piece of sealing wax and bringing same near the head of the instrument so that the leaves will separate. We then say the electroscope is charged. A charged electroscope remains so for quite a time, the air being a poor conductor.

However, as soon as the air becomes capable of conduction the leaves fall back to their former position. Such an ionisation of the air is readily obtained by Roentgen-rays, but in a much greater force and degree by radium rays.

The electroscopic proof of radio-activity is easily demonstrated and is best shown in a state of enlargement in the lime light where it is much easier to observe the retraction of the metal leaves. This proof forms the point at issue in every radium demonstration, and in looking over the mines of our planet with an electroscope, new treasures of radium may be discovered.

Likewise, in all future advancement of radium science the use of the electroscope is absolutely necessary. Each production of a gram of radium-salt requires the use of the electroscope.

As uranium rays give a weak photograph through black paper, this method led to the basic discovery of Becquerel.

The photographic experiments and results with Roentgen rays, will always hold a foremost position, whereas in the radio-active field, it is only of secondary significance. Far more important for the exhibition and recognition it seems to me, are the experiments which prove that radium produces its own light. Radium-salts not only produce light but they have the faculty of inducing other materials to emit light.

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Behind the barium-platino-cyanide screen, the radium salt crystals shine like stars in the dark. We are also able to produce through ingenious apparatus, much greater light phenomena. The sensitiveness of zinc-sulphide to light is extraordinary, and enables us to illuminate with radium emanation whole walls which have been covered with sulphide of zinc. When we enclose radium salt in a tube bordered with leaves of sulphide of zinc, spinthariscope, we see something that looks like constantly recurring lightning.

The sulphide of zinc is bombarded by the spraying-forth alpha particle and what we see is the alpha particle making its appearance as strokes of lightning. We may dispute over the sharpness of recognition in this apparatus, the spinthariscope, in comparison with the electroscopic method, but in any case these light experiments are instructive enough to give some elementary understanding of radium investigation and the science dealing with the subject. To one of the easily demonstrable properties of radium, belongs also the separation of emanation gas. As we have in liquid air a very convenient medium for the condensation of gases, the isolation of emanation is quite a simple experiment.

If we dissolve a few milligrams of radium-chloride in water, all the emanation will be set free and can be ejected. Through this solution we conduct a very powerful current of air and lead this air current into U-tubes, which are cooled by liquid air. The millions of Mache units of this condensed gas can now be scientifically demonstrated. With this emanation gas, we are able to take photographs.

The disintegration of radium, the gas nature of the emanation, the corpuscular form of the rays, the decadence and metamorphosis; all these phenomena are readily understood. Also the fact that radium develops heat which is not attended by any demonstrable loss of weight. Therefore we are today in a position to prove that radio-activity and atomic force are readily demonstrable phenomena of nature which were not known to our forefathers.

V—THE USE OF RADIUM AND THERAPEUTIC RESULTS.

The practical use of radium is in the first instance purely medical. The commercial use is for us of little significance. The few grams of radium, not more than one ounce, which form the store of the whole world, so far as it has been isolated up to the

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present time, is claimed by the medical profession. Investigators, especially physicists, require also a small quantity of radium-salts.

There are two methods used in the application of radium in medicine, viz.: that of irradiation and that of emanation-therapy.

The isolated radium or radium-salt, is used as a rule in irradiation. The emanation-therapy is mostly performed with the by-and-end products and also with the raw material, namely, pitchblende.

The great value and high price of radium is fully compensated for, by the fact that through the treatment, no losses are incurred.

Even if we had an irradiation or trauma or were burned by using a whole gram of radium, a medicament which would cost at today's market price $120,000 the interest calculated at 10 per cent. would not be more than $1.00 per hour for the amount consumed.

Nevertheless in the irradiation treatment important questions arise. Material which is one hundred thousand times more valuable than gold, has great risks attached to it; total loss, theft and storage are circumstances which must be considered. The author himself has experienced that through the carelessness of a nurse, a tube containing 10 milligrams of radium-bromide and representing an investment of $1,200, went into the fire.

However, irradiation-therapy in many cases use intermediary and by-products such as meso-thorium, thorium, etc., and also a new form of radium-salts which is considered an advancement in radium therapy.

We cannot too carefully point out the great difference between irradiation and emanation-therapy. The real therapeutic use of radium, is the one in which we use the radium element and where it acts as matter. With radium-irradiation this is not the case. Here we must take into consideration the action of the deeply penetrating gamma-rays which are not radium. It is only by certain methods that the beta rays and to a certain extent also the alpha-rays have an influence here.

Following the principle "fit a portiori" (to the most important thing give the name) it would be more correct if the radium-irradiation-therapy were classified as radiation treatment and discussed in connection with the Roentgen rays. The conception of radium-therapy should be reserved for the emanation therapy. Thus we would be faithful to the theory of Rutherford:

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Alpha particle
Emanation—Alpha particle
Active deposits—alpha particle
beta particle
gamma rays

It was to be expected that with a material such as the emanation, very difficult questions in regard to the application and practice would arise. Totally new ideas were conceived regarding the medical action of radium emanation. That such a minute quantity of material, a millionth part of a milligram, should produce any therapeutic action, was indeed a marvel.

It is a matter of history and perhaps there is no need to recall the violent debates and differences of opinion as to the fact that very small amounts of matter have a distinct medical action (ferments).

In serum-therapy we are accustomed to work with very small but still very active amounts of pathological material. Physiology has also given us valuable data. Koch's discovery of the first specific poison which in small quantities proved such a very powerful toxin to patients suffering from tuberculosis but quite harmless to the healthy, may be mentioned. The case is plainly this: if fifty years ago we had maintained that such small quantities of matter had a therapeutic action, we should have been looked upon as charlatans. Today in speaking of this subject, we need no longer fear that we shall lose the confidence of our confreres nor of our patients.

Lastly, that the atomic energy can be given in much smaller doses than the most powerful molecular force, is, not at all surprising. The energy which is contained in the atom represents the highest chemical energy bound into the smallest space, namely —the atom. It is the development of this latent energy into kinetic energy, which is just as mysterious to the man of today as was to the ancient archer the transition from his craft to gunpowder and dynamite.

The discovery of Madame Curie has opened a new field for chemical science, the atom world. Medical science uses radioactivity as it does any other pharmacological medium. The emanation is like any other medicine and must be used in exact doses and under strict supervision by the physician. The only question is which modus operandi is most in conformity with the anatomical relations and physiological conditions present.

As emanation is a gas, it was natural to introduce it through an organ which regulates the exchange of gases in the human

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system, therefore the inhalation treatment was looked upon as a great progressive step in comparison with administration by the mouth, which was the older form of treatment.

At this juncture the question forces itself upon us: how did it happen that radium became so quickly such a factor in modern science? It is due to a few correct deductions and considerations, and the prompt consideration of the wrong applications and methods.

For instance in the incurable diseases of which carcinoma is the proto-type, the difference of opinion even of the most intellectual men runs in different channels, while unlimited growth of the neoplasm is recognized by the patient as a symptom of nature which cannot be interrupted or disturbed. Nothing seems to be able to stop its growth. Legend, honest and dishonest deception, create a condition where it would seem that nothing is too fantastic, foolish, or aimless, to suggest in the treatment of this disease. Those who do not possess the faculty of the investigator but who look at things as they hope or fear to see them, will claim success and results or failure as the case may be. With great predilection, the latest teachings of experimental medicine are followed, and therefore it cannot be denied that the beginning of radium-therapy was ruled and controlled by this odious and fantastic practice.

Distress, misery and fear, were the factors which caused cure-claims to be published which should first have been thoroughly and deliberately investigated.

The first period in radium-therapy when the wildest claims were put forward caused great harm and damage which we still recognize and which in some quarters still causes a pessimistic attitude.

Humanity demands quite often that we deceive our patient, but never that we cheat him.

The polypragmasia, the use of all and every quack nostrum in the treatment of cancer is from a human and medico-ethical point of view strongly to be condemned.

I definitely and emphatically state here that the real radium therapy, the atomic energy of the disintegrating element, and also the products of its decadence, emanation, helium and emanation derivatives are not cancer remedies.

All results are of a symptomatic nature and analogically can be classified with the treatment by X-ray, of an epithelioma, which is free from all metastatic involvements, which is merely destruction of the growth by burning.

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The great problems of rapid growth and metastasis which are the real danger in carcinoma have in no way been affected by these new energies. The atomic force in this instance has brought us nothing new. This is readily understood, because the physiological process of growing organs, the multiplication of cells, is without a doubt of a highly molecular nature.

Let us leave this field of radium therapy, which was dictated by a singular and bizarre direction of thought endeavor to solve the far more important question: i. e. in what cases is the use of radium as based upon natural science and observation indicated?

When the pitchblende which is mined in Joachimsthal, Bohemia, was proven to be the best material (ore) for the isolation of radium, it was decided that the emanations of the springs of Bohemia should be examined, for in this totally new field of radium therapy, any theory which was based upon other than exact experimentation and clinical investigation would have brought fresh uncertainty and disaster. This foundation was established when the activation of the ferments, the digestive and metabolical processes were experimentally proven (Bergell, Braunstein, Bickel).

Bergell-Bickel's theory was that the curative action of mineral waters when taken at the spring was in direct relation to their radio-activity. However, for the physician, more important than all, were the facts that for centuries radio-active waters, although this peculiar quality was unknown, had been preferred to non radio-active waters.

When patients were attacked by gout, the physicians recommended Gastein. The great chemist Justus von Liebig, declined this advice because the analysis of the Gastein waters gave him no indication of a curative action. However, when his gout became worse and the suffering unbearable, he followed what he considered the non-scientific advice of his physician. Within a short time, he found relief, and calmly made the prophecy that his cure could not be the result of the Gastein water alone but that there must be something electrical in it!

History tells us that all these indications of radium therapy are not based upon fantastic ideas but that they have an empirical foundation based upon experience.

However, just when this theory was fairly well established and proven, erroneous speculation set in. The spirit of the well had been found, the philosopher's stone seemed to have appeared in the form of gas!

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Therapeutic miscalculations are due to the fact that qualitative and not quantitative results have been reported. When we had to deal with one Mache unit per thousand c. c., we spoke therapeutically as if a 1.000 M. U. in same quantity of water were present. The scientific and natural demand of increasing the original radio-activity through emanation, was totally ignored. Even today we hear now and then the foolish assertion that the natural radio-activity should not be increased by artificial emanations. They talk as if the chemist with his science were capable of destroying atoms or as if he could create atomic force. If either the one or the other were possible, artificial creation of life, would follow as a natural consequence.

Radium therapy soon increased the doses of emanation far above those which the natural springs possessed. Today we know that the greater radio-activity gives the better results, and I believe that here I am in accord with all serious-minded physicians who have had experience in radium therapy.

The form of introducing radium into the human system, should be in conformity with the physiological laws of retention and detention. Here it was proven that an inhalation treatment of 10,000 M. U. was not equal to the administration by the mouth of 10,000 M. U. I even go so far as to say that an amount of ten times larger viz.: a 100,000 M. U. by inhalation, is not equal to 10,000 M. U. by mouth. The therapeutic results would also favor the latter.

The above statement is based upon electroscopic examination of the blood. However, I will say that in an inhalitorium, which for instance would have from two hundred to three hundred M. U. per thousand c. c of air, equally good results are obtained, but in the balneological-therapy it is difficult to follow nature. A Gastein bath with thirty-three thousand M. U. is not easily duplicated in institutions where radium treatments are given.

It is surprising to see the wonderful effect which is obtained after such an exposure of the whole body surface, to a high dose of emanation.

In local inflammatory conditions such as neuritis, rheumatism, gout, arthritis, sciatica, chronic periostitis, a hot and moist pack with radium fango (radio-active earth) is indicated. This should be renewed several times a day. It is best to make two fango compresses and keep one in a hot water bath for a change. Such fango compresses can be used for an indefinite period. They retain their radio-activity and consequently their curative action.

Lately so called substitutes for radium have come into use.

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All these cannot replace radium, their emanations disintegrate rapidly and such substitutes can only be justified if at all because of the high price of radium. Mesothorium has quite a number of advocates, but it seems to me they ignore the truth, that mesothorium is at its best only a substiute for radium and we can never expect the results from it which we obtain from radium itself. Let us hope that new discoveries of radium upon our planet will enable us to do away with all substitutes.

Having spoken of radium and radium therapy, let us mention therapeutic results as they have been obtained where radium was used exclusively.

When the exaggerations of therapeutic results through radium were unmasked, the medical profession was compelled to demonstrate whether radium-therapy was possible when all propaganda for same had been eliminated.

That radium therapy was stripped of a false and empirical character and its real truth and value, demonstrated, it is only necessary to mention the results which even the most powerful critic could not refute because the proofs were too strong and self-evident.

In the first instance, we must mention the large group of gouty-rheumatic affections. The emanation therapy was used in these cases on account of the previous experience and success with natural radio-active water.

It is a very interesting point, that in these cases radio-active baths even when only locally applied, have a much better effect than inhalation and administration by mouth. In chronic rheumatism, the influence on the subjective symptoms are often very rapid. Pain, as well as mobility, can after a few days of treatment be favorably influenced. Slight setbacks may occur, but upon the whole the progress is rapid. In cases of very dry joint affections with absence of the articulation fluid, but otherwise not very acute inflammatory processes, it is probable, an unfavorable reaction will take place. Such cases should be excluded from radium treatment.

A similar point of view should be taken in cases of very advanced age. In these cases the pathological alterations are simply the final symptoms of low processes which can be disturbed by radium-therapy.

We see therefore, that even in the domain of gouty-rheumatic affections, the remedy cannot be used without discrimination. Practical experience, doses and indications are necessary in radium therapy just as in any other method of treatment.

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Nevertheless, this group of patients will derive the greatest benefit from the curative action of radium and therefore will be most mentioned and described in all literature dealing with emanation treatment.

Also the favorable influence with regard to mobility will always be recognized as will the improvement of an internal organ or a metabolic disorder. The first condition is recognized at a glance, the latter requires a careful analysis. The use of radium in these affections should, whenever possible be local. The use of strongly radio-active baths or a pack locally applied, brings results where a distribution of emanation as in a full bath has brought no relief.

In gout, with severe uric acid diathesis, radium does not bring a rapid result. The emanation is efficacious, but a large experience is necessary in order that every case may be helped and not injured. The emanation therapy should be energetically pushed between the attacks. The patient only feels sick when he is the victim of an attack no matter if it lasts a few days or a few months. As a matter of fact, the disease is the outcome of an increased uric acid formation and a decreased elimination. If for months, the uric acid formation is too great and the elemination insufficient, an attack will set in through which an immense amount of uric acid will be eliminated. Therefore we must look upon such an attack as a matter of self-help and rebellion of the tissues to restore the normal equilibrium.

The whole question of treatment is then, will we be successful in the interval of creating a favorable balance between formation and elimination.

Of the many metabolic factors which come into play in uric acid formation some are influenced and others not by emanation-therapy.

There is, however, no question that we are able to help in these cases by using high doses of emanation. We can keep our patients free from painful attacks. In other cases such as certain forms of nephritis, diabetes mellitus, in which radium was successfully used, it is enough to point out that radium emanation is not a universal remedy.

The great question of the future development of radium therapy, must be based upon physiological chemistry so that we may obtain a proper conception regarding the nature and action of radium emanation.

In the large field of arterio-sclerosis and its complications the activation of iodine medication in solution of 15, 0-25, :300cc.,

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of distilled with an activator not lower than 10,000 M. U. per 500 cc, gives us greater satisfaction than an iodide medication only. The above activated doses in tablespoons three times daily, in milk, will give excellent results without upsetting the digestive apparatus of the patient. Radium emanation can be combined with all material which has a proven value in the treatment of diseases. In anemia, radiumnized milk is highly beneficial.

VI—BALNEOLOGY

The use of emanation baths have found more and more favor as patients have often declared their refreshing action. The author to find out if perhaps this was due to a form of suggestion, substituted tap-water for the emanation bath and invariably the patients declared that they did not feel so well as after the former bath.

Beside the refreshing action, there is a sedative influence which is quite remarkable in nervous insomnia. The dose of emanation should not be higher than 12 to 20,000 M. U. When higher doses are given, the patient becomes so exhausted that it will be difficult to induce him to take another radium bath. I repeat that we must be very careful with our doses in cases of nervous disorders. It is best to start with quite a low dose, 3,000 M. U. per bath as otherwise the patient becomes irritable, complaining of headache, vertigo and general malaise.

Whether we should attribute these nervous symptoms to the direct action of the emanations, or as an indirect effect in consequence of an altered hyper-tension or metabolic changes, has not yet been decided.

The analgesic action is also well known in cases of local affections. When the patient steps into an emanation foot-bath or if a radium compress is made over an inflamed part, he very soon afterwards informs us that the pains of whatever nature they may be, have abated or ceased altogether.

The contention of "His" that the emanation cannot be absorbed through the skin, has been disproven. I have proven the presence of emanation in the perspiration after inhalation or administration by mouth or after an electric light bath containing one M. U., which was taken one hour before.

Lazarus, Loewenthal and Englemann, have made similar experiments and obtained identical results. The radio-activity of the blood after an emanation bath has also been established and to avoid the inhalation of the escaping emanation, the patient re-

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ceived a mask and the air necessary for respiration, was obtained from an outside source. Therefore this proves conclusively that the skin is permeable in both ways.

VII—BACTERICIDAL ACTION OF RADIUM EMANATION.

Opinions on this subject differ greatly. For instance, it was stated by "Isex" that emanation 5,000 to 20,000 M. U. per 1,000 cc. had a decided bactericidal action on the bacteria and micro-organisms in the mouth and this was believed to be due to the alpha-particle. The typhoid bacillus in a pure culture will only cease growing after being exposed to 100 milligram of the pure salt of radium-bromide for a period of 24 hours. However, when the above author states that the gonococcus dies after a few minute's exposure, he forgets that this coccus is very sensitive and difficult to cultivate in vitro and will die quickly when once outside the human system and below a temperature of 37.5 centigrade. The bacillus prodigiosus is sterilized by inhalations of emanation containing four hundred M. U. per 1,000 cc. of air. The staphylococcus and streptococcus are inhibited in their growth within twelve hours and completely sterilized in 24 hours. A culture exposed to emanation of 10,000 M. U. per 1,000 cc. for 12 hours, will no longer be able to inoculate another suitable medium.

My observation has led me to the belief that the bactericidal action of the emanation in the human system is of a greater potentiality than in vitro. As this is contrary to all other observations, I have no doubt that I will be attacked for making such a statement. I shall however answer my critics at some future date when my investigations have been completed.

[306 Haven Ave., New York.]

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MEDICAL HISTORY

Continuing the
MEDICO-HISTORICAL BULLETIN

Medical Life is the only monthly publication in the English language specializing in the history of medicine, and thus constitutes a distinct contribution to culture.

RENE DESCARTES
(1596-1650)

By Victor Robinson, M. D.

I speak of René Descartes, of whom the least that can be said is, that he effected a revolution more decisive than has ever been brought about by any other single mind. . . . And although he was constantly engaged in those lofty inquiries into the nature of the human mind, which can never be studied without wonder, I had almost said can never be read without awe, he combined with them a long course of laborious experiment upon the animal frame, which raised him to the highest rank among the anatomists of his time. . . . He deserves the gratitude of posterity, not so much on account of what he built up, as on account of what he pulled down. His life was one great and successful warfare against the prejudices and traditions of men. He was great as a creator, but he was far greater as a destroyer.

—H. T. BUCKLE.

He swayed not only his followers but his opponents for a whole century; and he gave to certain sciences, especially to optics, to physiology, and to physical astronomy, an impulse which has never been exhausted. . . . In every department of his thinking—in his first philosophy, his theology, his physics, his psychology, his physiology—Descartes sowed the dragons' teeth from which sprang hosts of armed men, to join in an intellectual conflict, internecine, let us trust, to their many errors and prejudices, but fraught with new life and energy to the intellectual progress of Europe.

—J. P. MAHAFFY.

I mean, that if you lay hold of any characteristic product of modern ways of thinking, either in the region of philosophy, or in that of science, you find the spirit of that thought, if not its form, to have been present in the mind of the great Frenchman. . . . Descartes took an undisputed place, not only among the chiefs of philosophy, but amongst the greatest and most original of mathematicians; while, in my belief, he is no less certainly entitled to the rank of a great and original physiologist; inasmuch as he did for the physiology of motion and sensation that which Harvey had done for the circulation of the blood, and opened up that road to the mechanical theory of these processes, which has been followed by all his successors.

—T. H. HUXLEY.

After a long absence, the younger son returned to his father's house at Rennes in Brittany. He had passed through adventures

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in many lands, and was pregnant with impressions struggling to be born, yet in the presence of his family he remained silent. His father embraced him, and called him his "little philosopher," as he did in the early days when this frail child—the last offspring of a dying mother—first exhibited his precocious inquisitiveness. But then he had been so pale and coughed so constantly—and a dry cough it was too—that the doctors predicted he would never reach puberty. So instead of being forced early into the schools, he was permitted to grow up in the pleasant gardens of southern Touraine, where a careful nurse watched over him, and a squint-eyed little girl played with him. The sickly lad overcame his cough, studied under the Jesuits at La Flèche, then went on his travels, and here he was, a man of the world.

Between father and this son, there was affection, but not understanding: they thought other thoughts, and while they lived under the same roof, they dwelt in different spheres. In Holland, where the boy had served under Maurice of Nassau—not because the prince was a great general, but because he was a great engineer —the boy had seen a mathematical challenge publicly placarded. It was in Flemish, and being unfamiliar with the language, he requested a bystander to translate the problem for him. The stranger turned the Dutch phrases into Latin, and then ironically suggested that his inquirer—who was in soldier's uniform—should find the answer. The young Frenchman promised he would, but perhaps was a trifle awe-struck to learn that he had been addressing the eminent mathematical philosopher, Isaac Beeckman, principal of the College of Dort. But the next day he brought Beeckman the solution of the problem, and the principal introduced him to several Flemish mathematicians, among whom he soon became an acknowledged master. Should he relate these triumphs to his father? He could not, for though the old man might smile indulgently, he would rather hear of his son's progress in horsemanship and fencing—these being pursuits more becoming a French *gentilhomme* who belonged to the *demi-noblesse de la robe*.

Across the table, his elder brother glowered at him with undisguised hostility. Once they had lain in the same womb, but now they were miles apart. While the elder brother had been attending to his landed estates, the younger had passed through his great mental crisis: on the eve of St. Martin's day, 1619, meditating alone in his warm room at Neuburg, he "was filled with enthusiasm, and discovered the foundation of a marvelous science"—the application of algebra to geometry. Agitated and exalted, "comparing the mysteries of nature with the laws of mathematics, he dared to

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hope that the secrets of both could be unlocked with the same key." An intellectual revolution took place in his room that day, but if he dared to speak of it to his elder brother—who was following in his father's footsteps as counsellor in the parliament of Rennes—he would be met by the retort that he was disgracing the family origin by indulging in such speculations and consorting with men who studied philosophy and wrote books and did not possess sufficient money to purchase a commission in the government. The sister had little to say, but she sympathized with the attitude of the elder brother. Therefore the young doubter could not explain that he had renounced Aristotle and the instruction taught in schools, and had determined to examine the principles of human knowledge anew. The mind of the sister did not extend beyond her drawing-room—but the mind of her younger brother embraced the universe, and extended its horizon.

So the youthful René Descartes, a stranger in his own family, again wandered away from the fold. He had already seen Paris, Breda, Neuburg, and journeyed through Bohemia, Hungary, Moravia, Poland, Pomerania, Brandenburg, Holstein, and Belgium; in Friesland, his travels nearly ended, for the hired boatmen, never imagining that a foreign gentleman understood their dialect, openly decided to throw him and his valet overboard, and divide the baggage among themselves, but Descartes drew his sword and uttered a few remarks which saved himself, his valet, and his baggage. Had it not been for his knowledge of Frisian—and his sword—modern philosophy would have had another history. Descartes now explored the Alps, and proceeded to Italy, visiting Venice, Rome and Florence, then returned to his native country, and resided for a few years in Paris.

During this period Descartes published nothing, but in Paris he associated with an inquiring circle of friends, and grew in intellectual stature. Many men have found it arduous to follow philosophy because of their poverty, but Descartes found it difficult because of his social position. Being a nobleman, it was incumbent upon him to play cards, dance, attend court functions, indulge in intrigue, beget illegitimate children, curse the populace, uphold the established religion, and eat and drink to excess. Descartes sometimes attempted to evade these duties, but with only temporary success. On one occasion he disappeared for several days, but an idle busybody named Le Vasseur, having spied the philosopher's valet in the street, followed him to the house where Descartes was hiding. Entering unbidden, Le Vasseur looked through the half-open door and detected Descartes in bed—al-

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though it was eleven in the morning. Paper was before him, and presently Descartes raised himself to write, then lay down again to meditate. This was not the first time that his work was thus interrupted, and Descartes was wise enough to realize that if he expected to write a flourishing Finis to his treatises, it would be necessary for him to relinquish the *aristocratie:* not in an atmosphere of debauchery and viciousness, but only in exile and solitude could the new system arise.

In the spring of 1629, a Frenchman whose sword-belt, silk-hose and valet proclaimed his station in life, became a resident of Amsterdam. Several letters which had been forwarded to him, expressed astonishment at his unaccountable resolution to forsake his country and renounce his friends. But he seemed content with his self-imposed expatriation, for a few years afterward, in an epistle whose style was inspired by the circumstance that it was addressed to Jean Balzac—one of the most famous letter-writers of the period—Descartes extolled the advantages of living in Amsterdam:

However well appointed a country house may be, it always wants innumerable conveniences only to be found in towns, and the very solitude which one expects is never to be found there in its real perfection. I will grant that you have there a river which can make the greatest talker dreamy, a valley so lonely that it can inspire you with transports of delight; but it can hardly happen that you will not also have a number of insignificant neighbors who come sometimes to intrude upon you, and whose visits are even more disagreeable than those you receive in Paris.

Whereas in this great town where I now am, there being not a soul but myself who is not in business, every one is so engrossed with his profits that I could live in it all my life without ever being seen by any one. I go to walk every day amid the Babel of a great thoroughfare with as much liberty and repose as you could find in your garden-alleys; and I consider the men whom I see just as I should the trees which you meet in your forests or the animals which pasture there; the very sound of their bustle does not interrupt my reveries more than the murmuring of a stream. If I reflect upon their actions, I receive from it the same pleasure which you have in watching the peasants who till your fields, for I see that all their travail helps to adorn the place of my dwelling, and makes me to want nothing there. If there be pleasure in seeing the fruit growing in your orchards, and its abundance before your eyes, think you there is not as much in seeing the vessels arrive which bring us in abundance all the produce of the Indies and all that is rare in Europe: What other place could you choose in all the world where all the comforts of life and all the curiosities which can be desired are so easy to find as here? What other country where you can enjoy such perfect liberty, where you can sleep with more security, where there are always armies on foot for the purpose of protecting us, where poisoning, treacheries, calumnies are less known, and where there has survived more of the innocence of our ancestors? I do not know how you can be so fond of the air of Italy, with which you so often inhale pestilence,

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and where at all times the heat of the day is insupportable, the cool of the evening unwholesome, and where the darkness of the night covers thefts and murders? But if you fear the winters of the north, tell me what shades, what fan, what fountains can so well protect you at Rome from the discomforts of heat, as a stove and a good fire can here keep you from feeling cold.

Descartes frequently explained why he had adopted Holland as his country, but—as often happens—he carefully avoided all mention of his real motive. Seventeenth century Holland, although at times distracted by its own theological rancors, offered a refuge to foreigners who fled from the inquisitors of Spain and Italy, the Jesuits of France, and the Calvinists of Geneva. So Descartes' actual reason for quitting France is obvious enough, for while he professed loyalty to his king and submission to his church, he preferred to be out of the reach of both.

During his twenty years in Holland, Descartes chose various towns for his residence, and sent the address only to Marin Mersenne—the Cartesian ambassador to the republic of philosophy. Descartes and Mersenne first met as school-boys at La Flèche, and their lifelong intimacy is one of the classics of friendship. Mersenne was the Henry Oldenburg of Paris—he made few discoveries himself, but he was sponsor to most of the discoveries made in Paris. He mapped out work for others, and spurred on his laggard comrades to activity; a discouraged and vacillating investigator found in Mersenne a genial and stimulating counsellor: he would coax out the hesitant doctrines and refer to them in one of his own treatises—conspicuously mentioning the originator—thereby quickening the publication of the new theories.

Mersenne's fidelity to Descartes never wavered, but he was on such cordial terms with Descartes' enemies that one of the worst—Voetius—made the mistake of appealing to him for help in overthrowing the unbelieving Frenchman. Mersenne was a father of the Minim Friars, and in spite of his devotion to the great doubter, his own orthodoxy was above suspicion. Mersenne wrote much on theology and philosophy, and in later years published several physico-mathematical tracts, but now he lives chiefly in the biographies of his illustrious friend.

In Paris, Descartes had begun writing some treatises, and it was expected that after he was fairly settled in Holland, these manuscripts would be prepared for publication. But Descartes explained to Mersenne that while working at them he had gained a little more knowledge than he had when commencing, and wishing to accommodate himself to the growth of this knowledge, he was compelled to make a new project larger than the first—as if

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a man had commenced a building to dwell in, and acquired meanwhile unexpected riches, so that the building he had commenced was too small for his altered condition. Such a man, continued Descartes, would not be blamed if he began again a new building suitable to his fortune.

Unlike many famous thinkers, Descartes was not an indefatigable worker, forever writing with never-tiring pen. Possessing neither strength nor inclination for unremitting toil, he asserted that an adequate amount of idleness was essential for the production of original work—and his practice followed his precepts. Descartes never rose early to prosecute his studies; while all the world was at its task, the philosopher slept; upon awakening, late in the morning, he still remained in his bed, meditating and writing, until about noon. In that bed Aristotle was vanquished, and ancient systems overthrown, and modern philosophy was born. Descartes was undersized, feeble-voiced and sallow-faced, but his pillow was a throne whence issued dicta which changed the intellectual aspects of the seventeenth century.

It was not until 1633, after further studies in metaphysics and astronomy, and researches in anatomy and chemistry, that Descartes' "new building," entitled *The World,* was completed. Before sending the manuscript to the printer, he inquired for a copy of Galileo's recently-published volume on the same subject, in order to compare it with his own. But instead of the book, he received startling news: Galileo, for proclaiming the doctrine of the earth's motion, was condemned to severe punishment by the Council of the Inquisition.

Descartes knew what occurred when the heralds of the Renaissance crossed the path of the Merciful Church. Campanelli, after twenty-seven years of imprisonment by Spain, was convicted of heresy, and received an additional sentence from the Holy Inquisition; Pomponazzi, because he discarded certain superstitions, was judged guilty of impiety, his treatises were burnt, and he himself narrowly escaped the same fate. When Descartes was a growing child in the gardens of Touraine, there was a fire at Rome —and into its flames was cast the truth-seeker, Bruno; when Descartes was a young man, there was a fire in his own country, and a freethinker was there to feed it: for refusing to swallow the creed of the Infallible Church, Vanini was condemned to have his tongue cut out, to be strangled at the stake, and then burnt to ashes —and not a jot of this sentence was abated by the gentle lambs of organized theology. Descartes thought of these things, and trembled. When the ardent Dolet, for rejecting the conclusions

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of his contemporaries, was marched to the stake to be tortured and executed, he punned a pentameter on his name—*Non dolet ipse Dolet, sed pia turba dolet.* But the martyr-stuff was not in Descartes, and in alarm he wrote to Mersenne:

I could hardly have believed that an Italian, and in favor with the Pope, as I hear, could be considered criminal for nothing else than for seeking to establish the earth's motion, though I know it has formerly been censured by some cardinals. But I thought I had heard that since then it was constantly being taught, even at Rome; and I confess that if the opinion of the earth's movement is false, all the foundations of my philosophy are so also, because it is demonstrated clearly by them. It is so bound up with every part of my treatise, that I could not sever it without making the remainder faulty, and although I consider all my conclusions based on very certain and clear demonstrations, I would not for all the world sustain them against the authority of the Church.

The careful Copernicus, realizing that his system of astronomy differed materially from that of Joshua—the doughty Jewish general who commanded the sun to stand still—declined for years to publish his manuscripts, and a printed copy of the book which "changed man's outlook on the universe," did not reach the author until he lay upon his death-bed—beyond the power of the Church. But Descartes was even more cautious than the Polish scientist, and as long as he lived, his *World* never ventured near a printing-press.

Putting aside *The World,* Descartes assured his friends and himself that he would never print anything, but the itch of authorship proved too strong, and on the eighth of June, 1637, when he was in his forty-first year—at which age John Mayow had long been dead—appeared his first quarto, *Discourse on Method.* This work was followed, four years later, by *Meditations,* which in turn was followed, after a three years' interval, by the *Principles of Philosophy.*

From these three volumes arose whole libraries in support and in refutation of Cartesianism, but we need not now examine Descartes' syllogisms, logic, a priori hypotheses, and criteria of truth. His chief merit is that he swept away the absurdities accumulated during centuries of mental sloth—a dwarf performed the task of a Hercules—and in his reconstruction of human knowledge, began with the tenet of universal doubt. "When I set forth in the pursuit of truth," said Descartes, "I found that the best way was to reject everything I had hitherto been taught; I therefore, will occupy myself freely and earnestly in effecting a general destruction of all my old opinions." The easy path of faith leads to the ancient pit of error, but the hard road of doubt brings the inquirer to the gates of truth. Of course, on his arduous journey,

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Descartes could not divest himself of all ancient prejudices, but at every step he preached the principles of free inquiry, of the value of experimentation, and of the rejection of authority.

According to Descartes, all propositions are involved in doubt, and admit of two opposite opinions. To hold such beliefs in the seventeenth century was to invite a religious funeral, so Descartes carefully explained that his unbelief extended only to mundane knowledge and not to revelation. But even his science had to be sneaked in by the back door. Since the Church refused to let the earth move, Descartes agreed that it did not move, but explained that it was like a passenger in a vehicle who was himself stationary, but was nevertheless carried along by the surrounding motion. To such base subterfuges was one of the greatest of philosophers compelled to resort in order to expound a doctrine which today enters into the curriculum of every schoolchild.

In spite of Descartes' protestations that his skepticism was limited to philosophical problems, the theologians were disturbed. With their keen noses for heresy, they perceived, justly enough, that if men commenced by doubting the current scholasticism, they would end by doubting the current faith. The battle was on, and the doctrines of Descartes were assailed by Jesuits and Calvinists —which is not in any way strange, for although much blood has been shed in the wars of religion, there is no essential difference between Protestant and Paptist, and the two sects have always combined in their warfare against rationalism. The scientific spirit was as abhorrent to Luther as to Loyola.

Holland—whose heretical blood had been so freely shed by the pitiless Alva—was less fanatical than the Latin countries, but had not wholly emancipated itself from the odium theologicum. For advocating toleration in the Netherlands, young Grotius was condemned by his countrymen to lifelong imprisonment, and would either have perished or grown old in his cell, had he not been rescued by his wife's ingenuity. The Dutch Calvinists, under the leadership of Gysbertus Voetius, the professor of theology at Utrecht, opened a vicious campaign against Descartes, accusing him—of course—of the crime of freethought. Personalities were indulged in, and Voetius insinuated that Descartes was "a spreader of atheism, and the father of bastards," while Descartes referred to Voetius as "the son of a sutler, brought up among harlots and camp followers." Voetius was one of those theologians who calmly condemned millions of men, women and children to eternal hell-fire—and then sat down to enjoy his supper.

The controversy reached acrimonious heights, and as the

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adversaries of "the second Vanini"—as Descartes was named—gained in numbers, they were no longer content with libels and lampoons, but succeeded in passing a decree forbidding the doctrines of Descartes to be taught in the university, and it was pronounced unlawful for the booksellers to print or distribute his treatises. And there came a day—the thirteenth of June, 1643—when the city bells of Utrecht rang out, calling aloud for "a fugitive and criminal" to appear before the authorities—it was René Descartes, the benefactor of mankind who was thus arraigned, though his only crimes were ideas that enlightened the world. The public hangman of Utrecht was preparing to burn Descartes' books, and worse persecution would have followed, but Descartes, remembering he was a French nobleman, appealed for protection to the French ambassador; the case was thus laid before the Prince of Orange, and Utrecht received the hint to search for offenders in less influential quarters.

Descartes was particularly anxious to conciliate the powerful Order of Jesus, but that scholastic Jesuit, Father Bourdin, ferreting out the danger that lay concealed in the new teaching, launched an early broadside against Cartesianism. Descartes knew, from his schooldays at La Flèche, that Jesuits act only in concert, and that Bourdin's attack signified Jesuitical disapproval of their former pupil.

But Descartes was not a solitary figure, standing alone against the intrenched ecclesiasticism of the age. From Roger Bacon's prison-cell, and from Telesio's books which the cardinals condemned, had fallen seeds nurtured by Pompanazzi and Campanelli, fostered by the wit of Montaigne and the laughter of Rabelais, watered by the tears of Galileo and Kepler, and fructified by the blood of Paleario and Bruno. In the seventeenth century the Renaissance was in full bloom, and everywhere—except in Spain, where the Inquisition had put an effectual end to all intellectual activity—defenders of Descartes arose, and preached his text with enthusiasm. When Cartesianism was ejected from the colleges, several teachers resigned their posts, and with the ardency of apostles spread the new gospel throughout Europe.

In spite of Paptist-Protestant combination, in spite of parliamentary condemnation and royal prohibition, Cartesianism could not be uprooted. At the young university of Breda, it was taught with fervor. The French Academy of Sciences, from the day that its doors opened, was steeped in Cartesianism. Mme. de Grignan, the Duchesse de Maine, the Marquise de Sable, and other ladies of high station, opened their salons for expositions of

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the Cartesian philosophy, and revealed such knowledge of it that they furnished material for Moliere's *Femmes Savantes*. Mme. de Sévigné, the immortal gossip of the age, speaks of the Cartesian system as something which must be learnt for social purposes, like dancing and card-playing. Moreover, many theologians whose orthodoxy was never impugned, accepted—with certain expurgations—the new system, and aided in its dissemination. It influenced the most advanced thinkers of the succeeding age: Ludwig Meyer, the friend and translator of Spinoza; Balthasar Bekker, whose *World Bewitched* not only attacked the widespread belief in witchcraft, but even dared to question the existence of the devil; the physician-philosopher, John Locke, whose mind was first stirred to enthusiasm by the books of the French philosopher; and Liebnitz, who spoke of Cartesianism as the ante-chamber of truth. Molyneux, of Dublin, in the preface to his translation of Descartes, compared his six *Meditations* to the six days of creation, "and certainly next to the creation of all things out of nothing, the restoration of truth out of errors is the most divine work; so that (with reverence be it spoken) the incomparable Descartes does hereby deserve as it were the name of a Creator." Descartes, however, was not compelled to wait for posthumous fame and praise; in his lifetime he had the felicity to be regarded as a classic, and heard men speak of him as the Archimedes of the age, the Hercules of science, the true Atlas of the universe.

As we turn the pages of history, we learn that the betrayers of humanity, the individuals who have heaped the most anguish on the human race, have been rewarded with the greatest power and honor: Torquemada, who burnt thousands of human beings, and robbed millions of their peace and possessions, himself reached a venerable age, and passed away surrounded by sovereigns; Alva, who counted that day lost in which he did not slaughter multitudes, whose victims crowded the graves of many nations, enjoyed the privilege of shedding blood until the end of his long career; that consummate villain, Louis XIV, who ruined his country by the revocation of the Edict of Nantes, was permitted, by man and nature, to remain on his throne, amid universal plaudits, for considerably over half a century.

As we turn these same pages, we also learn that the individuals who have uplifted the human race, have often been rewarded with poverty and persecution: Columbus, who gave a new world and a new impulse to mankind, was put in chains, which he kept in his room forever, "as relics and as memorials of the reward of my service"; Cervantes, one of the chief glories of the worst of

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nations, passed much of his time in prison, neglect, and destitution; Thomas More, one of the highest-minded Englishmen in the realm, solely because he refused to be corrupted by Henry VIII, was imprisoned and beheaded; Spinoza, a saintly figure, living alone and asking nothing from the world, but ever burning in his solitary study the lamp of rationalism and toleration, was pursued by obloquy, and even after his premature decease, men spoke of him "as if he were a dead dog"; Lessing, the champion of free criticism, whose pen widened and broadened the narrow creeds of his day, was pin-pricked a thousand times by theologic malice.

Descartes was more fortunate than these reformers; compared to their fate, his own was peaceful and prosperous. His books, in spite of the commotion they caused, were not successful financially—his publishers continually grumbled—but the money which he inherited enabled him to live in a manner suited to his tastes, and saved him from the necessity of getting up in the morning to earn a living by uncongenial work. Furthermore, his aristocratic birth, his gracious and polished demeanor, his contempt for the common people, his influential friends, added to his ability to dissemble and cringe, saved him from occupying a bed provided by the authorities.

M. de Sorbière, whom every one envied because he had nothing to do except to travel from country to country, visiting the foremost celebrities of each nation, has left us this glimpse of Descartes:

I hurried to Eyndegeest, half a league from Leyden, as soon as I reached Holland, at the beginning of 1642. I there visited M. Descartes with much pleasure, and sought to profit by his conversation for the better understanding of his doctrine. I was delighted with the civility of this *gentilhomme*, his retreat, and his household. He was in a little chateau of fine situation, close to a great and fair university, three leagues from the Court, and hardly two hours from the sea.

He had a sufficient staff of servants, all well chosen and comely people; a nice garden, with an orchard beyond it; and all around pastures, from which stood out many steeples of various heights, till in the far horizon they seemed mere points. He could go in a day by canal to Utrecht, Delft, Rotterdam, Dordrecht, Haarlem, or Amsterdam. He could spend half his day at the Hague, and return in the evening, making his excursion by the most beautiful road in the world, through meadows and houses of pleasance, then through a great wood bordering this village, which is not inferior to the fairest towns of Europe, and boasted at this time the residence of three Courts.

That of the Prince of Orange was quite military, and brought together 2,000 gentlemen in warlike array; the leathern collar, the orange scarf, the top-boots, and the sword were its principal features. That of the States-General was composed of deputies from the United Provinces, and of Burgomasters, who kept up the dignity of the aristocracy in their black velvet

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dress, their deep collars, and square cut beards. The Court of the Queen of Bohemia. . . might be compared to that of the Graces, where all the fashionable world of the Hague went almost daily, to pay their homage to the talent, virtue, and beauty of her four princesses, the eldest of whom had a fancy for the discourse of M. Descartes.

The princess to whom the garrulous M. de Sorbière referred, was Elizabeth, the favorite pupil of Descartes. In connection with Princess Elizabeth, we see Descartes in his worst light—the courtier leaking through the man, the sycophant overshadowing the philosopher. Not content with announcing that whereas the metaphysicians knew nothing of his mathematics, and the mathematicians knew nothing of his metaphysics, while Princess Elizabeth was the only one who understood both, Descartes was base enough to add that persons "of exalted birth have naturally more exalted capacities than are given to their inferiors."

Descartes and Elizabeth corresponded for years on philosophical and mathematical subjects, and Descartes dedicated to her his *Principles of Philosophy,* and wrote for her the treatise on the *Passions of the Mind.* Her brother, Prince Philip, also knew something about passions, for one day he stabbed a gentleman to death; her notorious mother, the beautiful "Queen of Hearts," accused her philosophic daughter of participation in this incident, and banished her from the Hague.

Elizabeth eventually became Abbess of the Herforden convent, which she conducted on the liberal principles of Descartes; the refugees of all religions were welcomed, and here the Princess sheltered the English Quakers, George Fox and William Penn. It is asserted that in her later years she grew more mystical, and regretted that she had ever spent on philosophy, the time that should have been devoted to true piety—just like a princess.

Descartes was wont to compare science to a tree, of which metaphysics was the root and physics the trunk, the three chief branches being mechanics, medicine, and morals—"the three applications of our knowledge to the outward world, to the human body, and to the conduct of life." Descartes' acute interest in medicine seems to have been the result of personal contact with the physician Regius, one of the most ardent of his disciples—afterwards his opponent—but in turning his attention to medical problems, Descartes was only following a well-established precedent, for at that time many mathematicians were physicians, and many physicians were mathematicians. If ever an aspirant for a Ph.D. is in search of a theme, we suggest an investigation of The Influence of Mathematics on Medicine. This influence survived

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to the eighteenth century, when the erudite English physician, Richard Mead, declared:

> It is very evident, that all other means of improving medicine have been found ineffectual, by the stand it was at for two thousand years, and that, since mathematicians have set themselves to the study of it, men already begin to talk so intelligibly and comprehensibly, even about abstruse matters, that it is to be hoped that mathematical learning will be the distinguishing mark of a physician and a quack.

More than one of Mead's medical treatises was inspired by the mathematical discoveries of Newton, but in the present age of specialization physicians understand only sufficient mathematics to enable them to compute a bill.

It is dangerous for a philosopher to enter the domain of medicine—he is so apt to slip into quackery. Bishop Berkeley did not believe in matter, or in the higher mathematics—"because it led to freethinking"—but he did believe in tar-water. In his *Chain of Philosophical Reflections Concerning the Virtues of Tar-Water,* he proclaimed it a panacea, his chain of reasoning being that from the sunlight and air the pine-trees accumulate the vital elements of the universe and concentrate it in the tar which when imbibed by the human system proved capable of curing such diverse maladies as smallpox, consumption, syphilis, complaints of the bowels, ulcers and gravel. The doctors who protested against this universal remedy were suspected of being financially frightened, and their scoffs could not prevent the belief in tar-water from developing into a mania. While Berkeley's treatise was being reprinted and translated into many languages, barrels and barrels of tar-water were being consumed all over Europe, and espcially in Great Britain, for Berkeley was a prophet in his own country. Testimonials poured in from all sides, and the Reverend Edward Young, the cheerful author of *Night Thoughts,* in alluding to the opponents of tar-water, wrote: "Now give me leave to say that this infidelity may possibly be as fatal to morbid bodies as other infidelity is to morbid souls." So Bishop Berkeley has his niche among the famous quacks.

Descartes made no efforts to add a universal drug to the materia medica, but he came perilously near folly by his plans for the indefinite prolongation of human life: on hearing that Mersenne was suffering from erysipelas, Descartes urged his friend to keep himself alive until he had completed his medical discoveries, and by throwing out hints that his treatise on medicine would point out the best method of "fighting the battle with nature," the philosopher raised extravagant expectations among his worshippers.

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In this connection, Descartes was visited by the audacious Sir Kenelm Digby, the prince of imposters. Kenelm Digby was the son of a leading Gunpowder Plot conspirator, but in spite of his blotted escutcheon, his irresistable suavity won the favor of James I, who was suspicious of every one else. Being a mon-eyed gentleman with nothing to do, Digby was permitted by the king to become a pirate and steal the ships of foreign nations—and in due time he celebrated his birthday by a victory in the Levant. There are two ways for a poet to gain immortality: one is by writing verses which are very good, and one is by writing verses which are very bad. Ben Jonson, in his eulogy of Digby's naval accomplishment, employed the latter method:

Witness his action done at Scanderoon
Upon his birthday, the eleventh of June.

Alternately frowned upon and feted by the court, dipping in the borderland of certain arts and sciences, changing his religion at convenient intervals, talking much and working little, talented and ill-balanced, learned and unreliable, killing a French nobleman for insulting Charles I, but fawning upon Cromwell during the protectorate, Digby is one of history's mountebanks. He married, secretly and suddenly, a lady more renowned for her beauty than for her virtue, and in order to preserve her good looks, he experimented upon his lovely Venetia, inventing various cosmetics, and finally feeding her upon the wine of vipers. She died mysteriously, and although the husband's lamentations were loud and violent, his enemies blamed the viper's wine.

Digby's association with the history of medicine—or rather, with the history of medical delusions—is due to his Powder of Sympathy, which miraculous drug he claimed he secured from a Carmelite monk, but no credence need be placed upon his statements, since he was a prodigious "teller of strange things," and his discourse was like a chapter out of Pliny. The sympathetic powder was applied, not to the wound, but to the weapon which caused the injury, or to a portion of the sufferer's garment. For example, the Duke of Buckingham's secretary had been so severely stabbed that death from gangrene was the doctors' prognosis, but Kenelm Digby came to the rescue. Asking for the secretary's blood-stained garter, he bathed it in a basin containing a solution of his sympathetic powder, and within an hour the secretary felt "an agreeable coolness," and was soon completely cured. Credulity writes testimonials for every fraud. Among the numerous laudatory letters which were sent to Digby, was one telling about a carpenter who had cut himself with an axe, and attempted a

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sympathetic cure by anointing the axe and hanging it upon a hook. The wound was progressing favorably, until one day it re-opened —because the axe had fallen from its hook. Madame de Sévigné pronounced the Powder of Sympathy "a perfectly divine remedy," but as she was almost equally enthusiastic about the therapeutic virtues of human urine, we may temper her ecstasy with judgment.

This Digby was the man who came to Descartes, importuning him to use his extraordinary knowledge for the purpose of increasing the span of human life; Descartes, ever susceptible to flattery, complacently answered that while he was not justified in promising to render man immortal, he was convinced that he could make us a race of Methusalehs.

But the scythe of death was not even blunted by Descartes, and he soon relinquished the attempt to vanquish the conqueror of all. His venture in this field does not affect his life-work—it simply takes its place among the absurdities of science, along with the archaeus of Paracelsus, and Hobbes' ludicrous efforts to accomplish the quadrature of the circle—and so many others.

Descartes said, "If it be at all possible to ennoble mankind, it will be only through Medicine," but his primary interest, of course, was philosophy, and not medicine, and he studied the latter branch merely that he might apply to it his system of philosophy —just as the Arabian philosopher, Averhoes, had done, centuries before. In order to complete his system of philosophy, it was necessary for Descartes to demonstrate that the mathematico-physical laws which govern the universe, govern also the human body; it was his object to prove that man was a machine, a skilful mechanism, all of whose processes, such as digestion and respiration, resulted from automatic and mechanical causes.

Descartes presented these views in his treatise on *Man,* which is now regarded as the first text-book on physiology. The story is told that when a visitor asked Descartes where he kept his library, he drew aside a curtain, and pointing to some animals which he had been dissecting, he answered, "There is my library." But Descartes was too steeped in speculation to be successful in experimentation. He was too great a philosopher to be an equally great physiologist. The human body was waiting to be discovered in those days, and striplings like Bellini and Regner de Graef wrote their young names on tubules and follicles, but Descartes' scalpel was not as keen as his logic.

Descartes accepted the new theory of the circulation of the blood—it was another proof that physical laws controlled the

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bodily machine—and he acknowledged that the merit of this discovery belongs to Harvey. It must have cost Descartes an effort to lay this wreath on the Englishman's head, for Descartes was chary of praise, and preferred to wear the laurels of priority himself. When Descartes looked at the earliest theorems of Huyghens, he predicted greatness for the future discoverer of the rings of Saturn, but as a rule, Descartes, although not as quarrelsome as Salmasius, belittled and disparaged his eminent contemporaries. He claimed he found little of value in the books of others, and when he journeyed through Florence, Galileo was there, but Descartes took particular pains to inform the public that he never saw Galileo and never learnt anything from him—in which respect Descartes differed from the violent-tempered Borelli who nevertheless traveled from Messina to the mainland to hear the voice of the father of physics. Harvey, however, not only aroused Descartes' intellectual admiration, but excited his personal curiosity, for in one of his letters, he asks:

Do you not know in London, a celebrated physician named Harvey, author of a book *De motu cordis et circulatione sanguinis?* What sort of person is he? As to the motion of the heart he has said nothing not found in other books, and I do not quite approve of it; but as to the circulation of the blood, there he has his triumph and the honor of first discovering it, for which medicine owes him much. He promised some other treatises; I don't know whether he has printed them. It is such works which deserve being read, and not a quantity of big volumes which are mere waste of paper.

This note sounds something like Hobbes' reference to Harvey as "the only man I know that, conquering envy, hath established a new doctrine in his lifetime."

The fame of Descartes was European, and Harvey appreciated his favorable opinion, for in the second disquisition to that anatomical nuisance, John Riolan, Harvey speaks of "the ingenious and acute Descartes, whose honorable mention of my name demands my acknowledgments."

In one physiological instance, Descartes saw more clearly than Harvey, for the latter persistently refused to believe that Aselli had made a discovery, but Descartes, in his treatise on the *Formation of the Fetus,* mentioned "the white veins, called lacteals, which Aselli has recently discovered in the mesentery."

It is interesting to hear Stensen's estimate of Descartes as a physiologist, delivered in the days when the illustrious Dane still preferred the dissector's apron to the bishop's gown:

Descartes was too clever in exposing the errors of current treatises on man to be willing to undertake the task of expounding the true structure of man. Therefore in his essay on *Man* he does not attempt such a delinea-

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tion, but is content to describe a machine capable of performing all the functions of which man is capable. And in this sense we may affirm without exaggeration that Descartes bears the palm over all other philosophers in this matter. For he was the first who dared to explain all the functions of man, and especially of the brain, in a mechanical manner. Other authors describe man; Descartes puts before us merely a machine, but by means of this he very clearly exposed the ignorance of others who have treated of man, and opened up for us a way by which to investigate the use of other parts of the body, though it may be difficult to do so with the same clearness and fidelity with which he proceeds in demonstrating the parts of his machine of man, a task which no man before him attempted.

Descartes once constructed a speaking figure which so frightened a superstitious captain that he threw it overboard, but Descartes would have admitted there was one difference between this machine and man—the latter mechanism, according to Descartes, was controlled by a rational soul lodged in the pineal gland. But Descartes did not admit that animals had a similar soul, his hypothesis being that animals are unconscious automata, possessing neither language, feeling, nor thought—a theory which led to monstrous results, for his followers were cruel to their domestic animals, "kicking about their dogs and dissecting their cats without mercy, laughing at any compassion for them, and calling their screams the noise of breaking machinery." Descartes could not believe that animals have souls, for he argued that if cats and dogs are immortal, the same principle must be extended to oysters and worms.

In this respect Descartes was distinctly behind some of his predecessors: Montaigne, who pointed out that there is more difference between the highest and lowest men than between men and brutes; and Charron, who after showing that animals have both reason and virtue, insisted, in modern language, that there are no breaks in nature.

It is indeed probable that we are automatons, with fate pulling all the strings—recent science rather confirms, than contradicts the view of Descartes—but Descartes' fundamental error lay in imagining an essential distinction between human and other animals.

In his *Dioptrica,* which formed one of the essays attached to his *Discourse on Method,* Descartes compared the eye to a camera obscura, and showed its accommodation to be due to the changes in the form of the lens. In his *Passions of the Mind* he opened up the field of reflex action by explaining the phenomenon of involuntary winking. His invention of analytical geometry, his undulatory theory of light, his investigation of figures of lenses causing rays to converge to a point, his discovery of Cartesian

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ovals, and of the law of refraction, make Descartes one of the founders of ophthalmology.

In his comparison of Descartes and Newton, Voltaire explained that Newton was not subject to the common frailties of mankind and had never approached a woman in a carnal manner, while Descartes evidently did not consider the passion of love derogatory to his character or his philosophy, for he had a daughter by his mistress. But even the incident to which Voltaire alludes cannot be regarded as a love-affair, for Descartes never makes the slightest mention of the mother, and his friends neither saw her nor heard her name. The child was born during the period in which Descartes was composing his treatise, on the *Formation of the Fetus,* and it has been suggested that Descartes fathered her for scientific reasons only. Yet he learnt to love his little Franchine, and planned her future, but she did not survive the perils of childhood—and so the little spinet which her father constructed for her, remained silent. Descartes was not an amorous man; in fact, he was ungallant to the point of boorishness—which is unpardonable in a Frenchman. He seems to have been one of those males who "wish that Adam had died with all his ribs in his body," for he affirmed the three rarest things in the world are a good book, a perfect preacher, and a beautiful woman. As a wooer, he was no more ardent than Newton; a lady whom Descartes might have married—if she had been persistent enough—asserted that during his courtship he uttered epigrams like this: "There is no beauty equal to the beauty of truth."

Descartes reverenced the truth, but not as much as he reverenced a throne. No reward of philosophy could have given him such satisfaction as the receipt of a letter from Queen Christina of Sweden, requesting his opinion on the excesses of love and hate. He replied with avidity, thus gaining his second royal pupil, for the queen continued the correspondence. As Descartes rose in her favor, he resolved to play a game in politics—hoping that by Christina's intercession, Elizabeth's family would recover some of their former powers in the Palatinate. So he wrote to the Queen about his exiled Princess, enclosing copies of her letters, discoursing about her tribulations and virtues. Descartes was not the first man who tried to bring two of his lady-friends together—and there are men attempting the same futile thing today—but no successful case is on record.

Christina took not the slightest notice of Elizabeth, but grew more and more cordial to Descartes—and finally invited him to come and live in Sweden. It is difficult to determine what Des-

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cartes really felt when he perused this request, but at first he affected hesitation. He explained to his friend Chanut—the French ambassador through whose medium the Christina-Descartes correspondence had been conducted—that a man born in the gardens of Touraine, who had retired to a country where there was less honey than in the Promised Land, but perhaps more milk, could not readily consent to live in the home of bears, among rocks and ice. Then he wondered whether his reception by the Queen would not excite envy and unpleasantness. But Christina, with royal impatience, sent a ship and an admiral to fetch Descartes to Stockholm, and though this vessel was compelled to return without him, Christina eventually had her way, for the day came when the philosopher knelt before the Amazon of the North.

On Descartes' arrival in Stockholm, in October 1649, Christina was in her early twenties. She was the daughter of Gustavus Adolphus, and in her infancy had been exposed by that warrior to the sound of cannon, and the noise and fury of battle had entered her soul, for a more vigorous valkyr never sat upon a throne. She detested her own sex, and yet nothing enraged her more than the suggestion that she should marry. The great chancellor, Axel Oxenstjerna, could cope with even a Richelieu, but he trembled at the antics of the energetic Christina. Strange to say, in this young and imperious virgin the arts and sciences found an ardent patron: in spite of Sweden's poverty, Christina spent extravagant sums on books and manuscripts, and antiquities and curiosities. She admired famous men, and gathered around her so many sages that Stockholm compared itself to Athens. Of course, contemporary judgment is often faulty, and Christina was a royal and not an infallible judge, so it is not surprising that at times she welcomed the pretender as heartily as the thinker, and that in her crowded court the charlatan jostled the scientist.

Christina showed her good sense by permitting Descartes to absent himself from all court ceremonies, and she also showed her good health by requiring him to instruct her in philosophy at five o'clock in the morning. Even in sunny weather and in warmer climes, Descartes had never seen the world at five o'clock, but when the queen speaks, the courtier obeys. The winter of 1649-50 was of such severity that even the Swedes respected their blankets by night and firesides by day, but in the bleak dawn Descartes passed from his home to the queen's palace. He composed a masque for the court, but evidently it was not another Comus, as his executors never published it—Voltaire says it was suppressed in honor to his memory. He prepared the rules, still extant, for

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an Academy of Sciences, which Christina wished to establish. As the climate visably disagreed with him, the queen planned to make him a noble and bestow upon him a large estate in her southern and newly-annexed duchy of Bremen or Pomerania. It was no hardship for Christina to ennoble and enrich her favorites—a stroke of the pen, and it was done. In fact, she was so generous in this respect that Sweden was impoverished.

Descartes might have lived to enjoy these coming honors, but that lesson at five o'clock was fatal. His weak lungs could not withstand that harsh hour, and in February he lay upon a sick-bed, suffering from the same pulmonary complaint from which his friend Chanut was convalescing. Descartes had helped to nurse the ambassador back to health, and now the recovered patient became Descartes' nurse. Accident and misfortnue met: the queen's chief physician, Reyer, a congenial countryman of Descartes, was out of the city, and Descartes found himself confronted by a Dutch doctor, named Weulles, who in the controversies in Holland had displayed a pronounced anti-Cartesian bias.

With such a physician, Descartes could not recover, for it is stated that "the very sight of this man set the patient beside himself, and . . . he told Weulles he would die the more peaceably if he would keep out of his sight." Venesection was then the curse of treatment—"a bloody Moloch," complained Van Helmont, "presides in the chairs of medicine,"—but Descartes' attitude was more enlightened than that of most of his contemporaries, and when an endeavor was made to bleed him, his cry rang through the death-room, "Gentlemen, spare the French blood." Later, upon the solicitation of Chanut, he permitted himself to be bled twice, but nature, which saved the ambassador, slew the philosopher. Before reaching his fifty-fourth birthday, Descartes passed out of the world—sacrificed to a royal caprice.

So Descartes, who thought to steal years from nature, himself died prematurely, but he was not one of those men "who leave the world with a mere Hic jacet." His mechanical philosophy was one of the dominating influences of his age. His apothegm, *I think, therefor I am,* is as deathless as Archimedes' *Give me a place to stand, and I will move the world,* or Bacon's *Knowledge is Power.* Such current phrases as Cartesian diver, Cartesian curve, Cartesian lens, Cartesian co-ordination, Cartesian oval, and several others, keep alive the name of this seventeenth century thinker.

Christina, with her usual impetuosity, determined to honor Descartes by burying him at the feet of Swedish kings, but the

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illustrious dust was eventually returned to its native soil. Yet had Descartes lain in Stockholm, Christina could not have mused long over his mausoleum, for in her twenty-eighth year, being vexed at the political suggestion that she acquire a husband, and being bored with what he termed the splendid slavery of royalty, she abdicated with great pomp—in male attire.

For the remaining thirty-five years of her life, she alternately amused and alarmed the nations. Repudiating the religion of her country, she espoused Catholicism, being rechristened Alexandra, and then spent much of her time in quarreling with popes and cardinals, and scolding Louis XIV for his persecution of protestants. Although she had abandoned her throne voluntarily, she still claimed to be a sovereign wherever she went, and proved it by putting her major-domo to death, her only reason being that he had been guilty of high treason against her. However, it was not necessary for Christina to condescend to details, since a learned and lengthy defence of her crime was prepared by Leibnitz—one of the greatest of philosophers, and one of the greatest of sycophants.

Christina's diplomatic intrigues were multifarious and international, but she never lost her interest in savants, and her Accademia at Rome was thronged with poets, painters, authors, musicians, and scientists. Here she befriended and protected the uneasy-souled Borelli, whose name is often bracketed with that of Descartes, as a leader of the iatromathematical school which, as we have previously shown, reduced all physiology to physics, treating locomotion, respiration and digestion as mechanical processes, comparing every organ of the body to a machine—the teeth to a pair of shears, the chest to a bellows, the stomach to a flask, and so on. After a lifetime of stormy service for science, Borelli had been compelled to flee from Spanish persecution in Sicily, and the hunted man arrived in Rome, destitute—except for a priceless manuscript upon which he had been working for a generation. Christina immediately offered to publish it, and it is to her that *De Motu Animalium* is dedicated. Christina herself wrote continually, but her alleged *Secret Letters* and *Private Memoirs: Dedicated to God,* are forgeries.

A man of genuine piety never forgives a doubter simply because that doubter happens to be dead. Not satisfied with burning and torturing multitudes, Torquemada dug up the bodies of deceased heretics, and punished them in ecclesiastical style. As soon as Descartes was in his grave, the Jesuits redoubled their efforts against him, urging the Congregation of the Index to proscribe

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his works. Year after year their zeal was unavailing, but intolerance never dies, and on the twentieth of November, 1663, everything that Descartes had written was placed upon the Index Librorum Prohibitorum. This, of course, is where the books of Descartes belong, for here will be found nearly all the books which broke the fetters of the human mind. The Index Librorum Prohibitorum is an index of the books of progress. The inclusion of a book in this Index is usually sufficient evidence that it is a contribution to the spirit of science.

The cardinals who told Columbus that the world was not round, the cardinals who told Galileo that the world did not move, were succeeded by the cardinals who tried to keep the world flat and still by outlawing the brain that produced the *Discourse on Method*. But like the great explorer, Descartes sailed into unaccustomed seas and discovered new land, and like the great astronomer, he saw new stars shining on humanity's horizon. By clearing away the boulders of tradition, René Descartes opened up new paths in every realm of thought. He was one of the men who doubted, and thus saved the world.

To appear in

Medical Life:

Robert Koch

Illustrated with personal and family photographs never before published

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Sexology

Continuing the
AMERICAN JOURNAL OF UROLOGY AND SEXOLOGY

SEX ANTAGONISM

By the Rev. A. E. Whatham

Is there such a thing as "sex antagonism?" In other words, are men and women naturally arrayed against each other in mutual hostility, each resenting some fundamental characteristic in the other which engenders a natural antagonism? To many, indeed, to the majority, such a question could only be met with surprise as they see men and women mutually drawn to each other by a desire eminently satisfactory to both. Nevertheless, such a hostility as implied exists to-day, and has existed from earliest times, to prove which the present article has been written.

In the earliest of primitive times with the beginning of the social evolution amongst men the matriarchate system, in other words, mother-rule in the family, was largely, if not entirely, the first stage in this process. This conclusion must be accepted as warranted because, as Northcote rightly asserts, "Primitive ignorance of paternity may now be regarded as a proved fact" (Christianity and Sex Problems, p. 391). This same writer further tells us, "Whether, in the history of mankind at large, the patriarchate or the matriarchate is the older institution, is still debated," and he immediately adds, "but in the section with which we are here particularly concerned, the older Semites, so far as the history of their social evolution is known, the matriarchate is the form of the family which comes first into view" (ib, p. 260).

The existence of two strong forces working on primitive man's mind from the very first tend to confirm the conclusion that the matriarchate system was the earliest form taken by the social evolution, the fact that the virgin mother goddess was the original deity worshipped by man, and the fact that from the beginning men have been afraid of women viewing them as uncanny or mysterious beings.

Men have not always looked to the heaven above them as the natural dwelling place of deity, for the gods were originally conceived of as chthonic, or earth born, the virgin-offspring of the earth mother-goddess.

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Again, when men had transferred the gods to heaven, they personified the roaring, raging flood of the watery-deep, which the Semites in their Babylonian home assumed to be the first form of the material of the universe, as a woman, who, in representing darkness and disorder, was bent on the destruction of the gods, who represented light and order. In the earlier form of the legend of Creation as evolved by the predecessors of the Babylonians, the Sumerians, this woman, the dragon Tiamat, consort of Apsu, is a beneficent and not a furious monster-deity. It was only upon the later introduction of the male principle of rule as seen in the creation of the gods of heaven, earth, and sea, Anu, Bel, and Ea, that Tiamat, the primeval mother of all creation was altered in character to a terrible raging female, the enemy of peace and order, who put to flight Anu and Ea, being finally conquered by Marduk (cf. King—Schweich Lectures; Jastrow—Religion of Babylonia and Assyria).

Now I venture to think that underlying this later description of Tiamat there is a sex psychology which has escaped the mere literary students of the Creation legends whose work has been solely to decipher these records as they appear in various ancient inscriptions. When the poet wrote:

> **Heav'n has no rage like love to hatred turn'd**
> **Nor hell a fury like a woman scorn'd.**
> **Congreve—Mourning Bride, Act III, Scene 8.**

he was merely in these later days voicing the opinion of a woman's character in most circumstances of her life which men have held from the remote past. Men from the earliest times have viewed women with suspicion, jealousy, awe, and contempt. In simple language, men from the beginning of the evolution of the social system have been afraid of women, whom, nevertheless, they have always held in more or less contempt. Of course the whole attitude was wrong, for the natural character of woman is more loving, and in many ways higher, than the natural character of man. Wrong as it was, however, there were natural forces at work which, while men were unable to analyse their origins and significances, led men to take an utterly wrong view of woman's character, so that, in examining this whole subject in the light of our later scientific knowledge, we shall be able to do justice to the male and the female thought which respectively led each of the two persons concerned to take an entirely wrong view of the other. As a step to the end we shall now examine the reasons which have from the first led men to view women with suspicion, jealousy, awe, and contempt.

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The question asked in Proverbs, "Who can find a virtuous woman" (31.10)? means exactly what the word "virtuous" used in connection with a woman signifies in English—morally chaste, and not as the R.V. renders it, "a worthy woman." The fact of the existence of multitudes of *worthy* women must have been well-known to every Jewish scribe or thinker, but the existence of a *virtuous* woman as representing the character of women generally was an entirely different matter, for the Hebrews thought that women were much more erotic than men, so much so that it was, as Proverbs indicates, difficult to find a virtuous woman. So strongly, in the eyes of men, was woman governed by the desire for mating, that they viewed this as the curse put upon her for having originally led men to sin, for the Hebrews attributed to woman the first sin, which she committed in luring man to an act of lust with her for the mere physical pleasure it specially gave to her (Eccles. 25.24). That this is the meaning of the act of transgression as recorded in Gen. III, is sufficiently plain to every student of Phallicism, and ought to be plain to every Old Testament scholar acquainted with the manners and customs of primitive peoples. That it has not been so, however, is shown by the fact that no exclusively O. T. scholar has recognized the veiled record of an act of illicit sexual union in Gen. III. In fact, such eminent O. T. scholars as Toy and Cheyne have actually denied that there is any such allusion in this chapter (Jour. Bib. Lit, 1918; Traditions and Beliefs of Ancient Israel, p. 80). On the other hand, eminent sexual psychologists, archaeologists, and scholars who are equally students of anthropology, semitic lore and the O. T., such as Havelock Ellis, Clay Trumbull, Crawley, Barton, Peters, and a host too numerous to mention, have seen this meaning in this chapter. The story is so skillfully told that to the reader unenlightened in the particular knowledge required, "The physical union indicated," says Peters, "escapes his notice" (Early Hebrew Story, p. 222). Jastrow sees in the story of Eabani's fall owing to the nude enticements of the temple harlot, Ukhat, a parallel to the fall of Adam by "yielding to the allurements of Eve" (Babylonian and Assyrian Religion, p. 511).

The subject of the actual significance of the act which resulted in the "Fall" as recorded in Gen. III, has been specially dealt with by the present writer in The Amer. J. Relig. Psychology, Aug. 1905 (The Outward Form of the Original Sin). Cheyne refers to this treatment in his work already mentioned, dismissing it with the singular reply, "To most of this the answer is simple, viz, that the framework of the story being mythical, it is unnatural to

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spoil the myth by treating its details as symbolic or euphemistic."

That Cheyne with all his great scholarship was unable to deal with this particular point is seen in his question touching our assertion that the fig-leaves which Adam and Eve put round their loins after their transgression, "what evidence is there that the Semitic peoples regarded them as symbols of sex?" Equally strange is the question asked by both Dillmann and Driver, "Why in particular fig-leaves" (Genesis-WC, p. 46; Genesis, Vol. I, p. 154). Why, indeed, should Adam and Eve have chosen fig-leaves to hide their nakedness, and their particular nakedness where the transgression had taken place and no other?—the answer is easy. For the simple reason that from time immemorial throughout the entire east the fig-tree as a whole, and in its separate fruit and foliage has been regarded as a sex-symbol, a sign of fertility. To this day in India thousands of barren women worship the male fig tree in the hope of having offspring by so doing (Cultus Arborum, p. 7). A painting from Pompeii represents a sacrifice to Priapus, the god of fertility. At one side is a woman in the act of worship, at the other a boy carries on his head a basket full of fig-leaves on which reposes an effigy of the male organ of generation (Inman--Ancient Pagan and Christian Symbolism, pp. 50, 84). Trumbull tells us that "the fig and the pomegranate, with the peculiar form of their seed capsules, appear in all the earlier religious symbolisms, over against the phallus in its realistic or conventional forms, as representative of reproductive life" (The Threshold Covenant, p. 231). When we add to all this the custom of primitive peoples that their women only wear clothes when married, and then mostly wear them only round the loins, we can readily see that Adam and Eve making girdles of fig-leaves to go round their loins after their act of transgression points to only one explanation as to what this particular act was, viz, a sexual transgression. Much confirmatory evidence of this conclusion might be adduced had we time and space, such as the fact that the Semites had a strong tendency "to sexual excesses" (Barton—Semitic Origins, p. 42), but perhaps the strongest is the fact that to this cause of the introduction of sin into the world there is another added in Gen. 6.1-4, and here again it is lust, lust on the part of supernatural beings, the Sons of God, who become captivated by the physical charms of the daughters of men.

Now the evidence just given, to which much more might be added of the same character, explains Prov. 31.10, showing clearly what is behind the strange words in this passage. Men from the very beginning of the social evolution have been suspicious of the

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free use that in their judgment most women, given the opportunity, will make of their virtue. In plain words, men have never believed that natural virtue was a trait of most women. Thus it is that Eccles. 26.1, runs, "Blessed is the man that hath a virtuous wife," because, as the cited passage from Proverbs says, "A virtuous woman who can find?" Again Ecclesiasticus says, "Gaze not on a maid, lest haply thou be caught in her penalties" (9.5). The question has now to be faced—Have men ever had any justifiable ground for harboring this particular suspicion against women?

To answer this question completely would take a special article, which we have in contemplation, but here we can only give a brief indication of what the answer is likely to be in view of the evidence, evidence which has led the famous anthropologist, Letourneau, to characterize female modesty as an "artificial sentiment," and to add, "comparative ethnology proves that it must have resulted from the enforced chastity imposed on women under the most terrible penalties" (The Evolution of Marriage, p. 56). Contrary to the popular belief, the true scientific fact is as stated by Northcote, that "Casual and reckless sexual intercourse is abhorrent to primitive man" (ib. p. 7). Here this writer means, or should mean if he does not, man as differentiated from woman, since primitive woman never showed, at least in equal degree, this same abhorrence. To enter more into this question would be to forestall another article and to leave the main point of this present one, consequently we shall now close this investigation into the origin of man's suspicion of woman as regards the possession by her of any inherent trait of sexual purity or modesty.

When Ecclesiasticus warns men in the following words, "Give not thy soul unto a woman, that she should set her foot upon thy strength" (9.2), we see a man's inherent feeling that in any relation with a woman she will endeavor to obtain the mastery over him, thus has arisen his jealousy of her.

In 1 Esdras 4.29-32, we read, "Yet did I see him and Apame the King's concubine. . . . sitting at the right hand of the king and taking the crown from the king's head, and setting it upon her own head; she also struck the king with her left hand. And yet for all this the king gaped and gazed upon her with open mouth. . . O ye men, how can it be but women should be strong, seeing they do thus."

Of course this jealousy was born of the awe, otherwise fear which primitive man entertained for women, for woman has ever been a mystery to man, mentally and physically.

We said that underlying the later description of the dragon-

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monster, Tiamat, there is a sex-psychology which has escaped the mere literary students of the Creation legends. When Ecclesiasticus says, "All wickedness is but little to the wickedness of a woman" (25.19), there is either a conscious or unconscious reference to the belief that she was the introducer of sin, or concrete wickedness, into the world through her exceptionally strong sexual passion, a passion so strong in the influence it is capable of exerting over men that a man becomes as weak as water in the hands of a designing woman, most women being of this character in the eyes of men. Men, therefore, from the very beginning of history have been jealous and afraid of women while they have been irresistibly drawn to them by that sex appetite which men ignorantly thought was chiefly aroused in them by the evil design of woman. Again, woman's monthly periods were from the first a terrifying mystery to man, so much so that he attributed them to a demon in the form of a serpent (Havelock Ellis—Man and Woman, p. 14; Frazer—The Golden Bough, Vol. 1, p. 325f). In fact primitive man from early times, and long down in his history when possessing a high degree of civilization, has viewed woman as the special vehicle in which both demons and gods embodied themselves. It is little wonder, therefore, that men have always regarded woman with both jealousy and awe, attributing to her the beginning and chief influence in the continuance of evil. Of course all this was very wrong, the sole outcome of ignorance and superstition bred of ignorance, of which we shall have something to say presently, in the meantime we shall deal with the last of the four present points.

Despite the fact that men from the beginning of the social system have viewed women with awe, they have also viewed them with contempt, a contempt strongly expressing itself in St. Paul's view of woman as merely the glory of the man, while he views man as the immediate glory of God (I Cor. II.7). With the translation of the gods from earth to heaven, men began to view themselves as the special representatives of deity as rulers of the earth, and all its inhabitant, including woman. Women were therefore regarded by men as their property with no more rights of their own than as property, which means of course that they had no personal rights at all, for they could be sold, exchanged, loaned, given away, or put to death according as their owners, father or husband, desired. At no time, however, did women become reconciled to any such view of their persons, and consciously or unconsciously there has always existed a desire on the part of woman to become *even* with men, if, indeed, such desire did not take the character of mastership, which very often it did.

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A lady psychologist, Miss Harriet B. Bradbury, in an interesting little work, "Civilization and Womanhood," says, "To 'wind her husband around her finger' is still the recognized resource of the victim of marital tyranny, and by that means the apparently weaker party may often become the actual ruler" (p. 37). She adds, "It is quite natural for men, when they find themselves worsted in the struggle for supremacy. . . . to seek to re-establish their dominion by securing for it the sanctions of law and religion." Finally she says, "often in the revolt of one sex or the other against evils of which the opposite sex is supposed to be the cause, there is developed an antagonism which far from advancing the spiritual life of either sex, makes one of them harsh, self-righteous and cold, while the other struggles with repressed bitterness and sense of injustice" (p. 200).

Amongst his remarks on "The loan of the wife amongst savages," Letourneau says, "On this point the Redskins are no more delicate than the Esquimaux. Thus the Natchez make no difficulty of lending their wives to their friends. In New Mexico the Yumah husbands willingly hire out their wives and their slaves, without making any difference." Nor was this custom confined to savages, for to a practically late period in civilized society it continued to exist, for "the husband or the proprietor of the wife considered her absolutely his thing, and did not scruple to lend her to his friends, to barter her, or to hire her out." Thus at Athens Socrates "lent his wife Xantippe to his friend Alcibiades," while at Rome "Cato the elder gave up his wife Marcio to his friend Hortensius" (ib, p. 52f). Nor because of St. Paul's statement in Gal. 3.28, that "there can be no male and female" in Christ, must it be supposed that Christianity has given woman any higher place in the social order than did Judaism, which emphatically emphasized what it considered the "inferiority of women to men" (cf. Talmud). Letourneau produces evidence to show "how hurtful the influence of Christianity has been on marriage" (p. 206). We can well imagine this to be so when we recall St. Paul's definite statement already cited that it is only man who is the glory of God, woman being only the glory of the man. We are not surprised, then, that owing to their ignorance of physiology and psychology, "the fathers of the Church and the preachers did not cease to utter their thunders against woman, disparaging her, and abusing her as an impure creature, almost devilish." Tertullian had called her "The gate of the devil," and Augustine had characterized her as "A temple above a drain."

Of course all this wicket degrading of woman is terribly

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humiliating for the modern sane thinking man to bear when he reflects that it was the outcome of ignorance on the one hand and an extraordinary lack of the sense of justice on the other. And yet there are some extenuating circumstances that may make the modern man less ashamed of his male forefathers who so shockingly misunderstood this whole subject, such circumstances being chiefly found in this word "misunderstood." For what but a gross misunderstanding of this whole problem is responsible for the statement in Rev. 14.1, 4, 5, that one hundred and forty-four thousand men are chiefly accounted worthy to accompany the Lamb because they had not defiled themselves with women, in other words, that they were virgin-men. Even Jesus is recorded as commending eunuchs who had emasculated themselves for the kingdom of heaven's sake (Matt. 19.12). Well may the modern New Testament scholar reject the story of the virgin-birth of Jesus, since it is not only founded on pagan ideas, but also on the ignorant notion that there is something indecent in the method of a natural conception.

Returning to the direct subject of sex-antagonism. Crawley gives numerous examples of its existence in savage life. He shows that in instances where the men govern their wives by force, the latter "recoup themselves when they get the chance." He gives instances where wives "hate their husbands." We have quoted Miss Bradbury as saying that as a result of marital tyranny it is quite customary for the wife to endeavor to "wind her husband round her finger." Crawley, however, shows us that in savage life it is quite customary for women to do actual battle with men, women in company taking a delight in beating a man when catching him alone (pp. 42, 291, 311, 361, 416). We see, therefore, that the method to which Miss Bradbury refers by which a woman gets her own way with a man is one belonging to the arts and tricks of women belonging to a more or less polite society of much later development. It may surprise many to be told that "club-life" is by no means a modern custom, but one met with in the beginning of social evolution. Says Crawley, "sexual differentiation often develops into real antagonism." Primitive man everywhere early devised the most elaborate means for "keeping the women in order," and teaching them "the necessity of obedience," all on the ground that if not so taught, say the men, "they would then become our masters" (ib, 42, 43).

Instances of associations "to keep the women in subjection, are the Egbo in Calabar, Oro in Yoruba, the Purro, Semo, and varieties of Egbo on the west coast. . . . Women in their turn

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form similar associations amongst themselves, in which they discuss their wrongs and form plans of revenge." "In the Port Lincoln tribe a small kind of lizard, the male of which is called Ibirri, and the female Waka, is said to have divided the sexes in the human species," an event which would appear not to be much approved of by the natives, since either sex has a mortal hatred against the opposite sex of these little animals, the men always destroying the Waka and the women the Ibirri. The whole system of sexual *tabu* as invented by men has from the earliest times isolated and humiliated women, while men have also from the earliest times used their strength to get the most labor they possibly could out of the woman. In all this men have seldom shown anything approaching real love for women, but, on the contrary, suspicion and contempt. There is nothing strange, therefore, that women have developed a solidarity of sex which has taken the form of a strong hostility to men.

And here we may safely bring this article to a close feeling that we have sustained our contention, that consciously or unconsciously, and often much more consciously, men and women are naturally arrayed against each other in mutual hostility, each resenting some fundamental characteristic in the other which has produced this said hostility, which we have designated "Sex-Antagonism."

Art and Morality

More than half a century after France decided that Theophile Gautier's extraordinary novel, "Mlle. de Maupin," was not an immoral book, an American judge has come to the same conclusion. The bookseller was acquitted of the charge of selling a wicked book, and the Anti-vice Society, which had brought the charge against him had to pay $2,500 for its meddlesomeness. A deep sigh of relief must have been breathed by cultured Americans who have the artistic welfare of their country at heart. It would appear from this decision that we are catching up with Europe at last, that we are only fifty years behind them now.

MEN AND THINGS, *American Medicine.*

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ABORTION AND ETHICS

A REPLY TO DR. HERZOG'S REPLY

By Herman Dekker

No progress in controversy is possible between Dr. Herzog and myself on the subject of the ethical status of abortion unless we can come to some understanding of what a correct ethical standard is. Such an outcome is hardly likely, and certainly not in the pages of MEDICAL LIFE, which is not a journal for the discussion of ethical problems in general. My comment on Dr. Herzog's criticism of an attempt by me to discover some ethical ground for abortion as practised in 20th century America will therefore be brief. Regarding the very temperate and courteous remarks made by Mr. James F. Morton Jr., I believe he and I would find ourselves in complete accord could we have the opportunity to compare our views in detail. I find nothing in what he says fundamentally at variance with my own analysis of the public attitude toward abortion in the United States.

Dr. Herzog's chief objection to my views is that I do not formulate a clear, specific, positive, dogmatic ethical rule and measure all things by it. He does not say this explicitly, but it is a fair inference from this sentence of his: "I contend that organized religion and philosophy both formulate codes of ethics and that it is not the masses of the people who do so." I suppose Dr. Herzog means by "formulate" to create or discover in the first instance, and that without philosophy and religion we should have no ethics. This conclusion seems hardly consistent with his reference a little later to "the ethical laws evolved by society, as propounded and formulated by philosophy and organized religion." How can philosophy and religion "propound" what society "evolves"? The two things seem inconsistent if I know what the two words mean.

Which is the essential thing, social behavior, or acting together, or the conscious formulation into a rule? Which is primary, gravitation or Newton's "law" of gravitation? Just as gravitation acted long before Newton described how it acts, so socially approved and disapproved conduct is a factor in individual and social life without the philosophers and priests setting down the conditions of its appearance. What the philosophers and priests do is only to tell us what we ought to do after society itself had told us long before. Very often, so dull are these philosophic and religious big-wigs, so inflated with a sense of their own authority and importance, that they keep on telling us we ought to do this

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and that when in fact society itself no longer issues such a mandate. Life and society have simply marched past them, but that fact they in their blind arrogance have not yet perceived.

Dr. Herzog speaks of philosophy and religion producing our ethical rules. Perhaps he could tell me *whose* philosophy and *what* religion. Let us get down to concrete things. Give us some definite philosopher and his philosophy or some special religion, and let us examine it from the point of view of genetic psychology and social environment; in a word, let us not forget biological and anthropological, as well as historical, perspective. That will help us to understand special philosophies and religions. "Philosophy" and "religion" in general are terms that give us no light; they, in fact, *teach nothing at all.* What we do find is that particular philosophies and religions teach various and often contradictory things. Dr. Herzog, instead of dealing in generalities, ought to tell us which of these philosophies and religions is right.

My critic's theory that there is some way of getting hold of an ethical standard apart from the particular social conditions of a given period, will break down when he comes to make definitions of specific virtues and vices. For instance, what is adultery? Your Roman Catholic will say one thing, your Episcopalian another, your secularist another. A man and a woman born in the Roman Catholic church and married by a priest, on losing their faith, getting divorced and re-marrying, would be guilty of adultery, according to Roman Catholic teaching. Does Dr. Herzog agree? I doubt if he does. Adultery is what society at the time says it is. A kind of sexual relation that is adulterous in one period or place is not such at all at another place and under other historical and social conditions. So it is with what we call fornication, so with prostitution. Dr. Herzog could find numerous instances of this general fact in Westermarck's "Origin and Development of the Moral Ideas" or in Sumner's "Folkways."

Consider infanticide. With us it is immoral and unethical. But the ancient Spartans did not so consider it, as practised in the case of defective children. Even to-day many physicians do not believe certain kinds of congenital defectives should be artificially kept alive at birth. Plato, the father of all the absolute idealist ethics in the western world, evidently thought infanticide under certain conditions was not wrong, for he ordered it to be done in his perfect state.

Again, in the case of murder, the definition depends upon the social attitude, not upon philosophers or priests. Was it not Frederick the Great who made the remark that it made no differ-

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ence what he did, he could always find philosophers to justify it? That comment applies not only to Prussia. Killing a man in self-defense is not said to be murder, nor is fighting in defense of your country or class or hanging a man at the behest of the state. None of these things now is murder. As for stealing, while there are a few extremists who say that holding any kind of private property in land or capital and taking the benefits therefrom is robbery, the majority believe that interest at four and a half percent on a $100 Liberty bond is a just obligation which ought to be paid. If the rule applies to a $100 Liberty bond, why not to $100,000,000 held by one man?

I might continue naming general ethical values and showing the gradations and shadings by which actions are distinguished. For all that trouble I should probably be called a casuist. But what I infer from the great variety of actions and their consequences, as related to moral evaluation in different times and places, is that to work out a system of right and wrong from "the abstract . . . laying down rules of conduct," as Dr. Herzog says, is quite a hopeless task. This is readily seen in the experience of Roman Catholic moral theologians, who in the vast number of cases of conscience presented to them for consideration in the confessional, in order to get any sort of workable theory have been obliged to mitigate their tight categories of right and wrong by the doctrine of "probabilism." In this manner there results a certain flexibility that manages to adjust a supposedly rigid standard to so protean a thing as life.

Dr. Herzog wants to bend life to fit these categories, where I hold that life creates its own categories, and these change as life and human interests change. That is the ground of the difference of opinion between Dr. Herzog and myself as related to abortion and no doubt to many other subjects of ethical interest. I, too, believe, in rationalizing conduct; but I do not forget that there must first of all be something provided upon which reason, with its ordering and classifying power, can work. That something is the raw material of life—impulse, vitalism, chemical affinity, call it what you will, of which reason is but one expression.

While this unique force is willing to submit for a time to well-formulated commandments, the time comes when its potential breaks a new path into the unknown, and produces heretofore unsuspected forms—and thus gives people like Dr. Herzog and myself, who have an ethical hobby, something to wrangle about.

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VOL. 28, No. 4

Medical Life
JUN 17 1921

MEDICAL LI

Treatment of Insanity
By E. Pirkner, M. D.

The Old County Hospita
By Bayard Holmes, M. D.

Scientific Method of Histo Writing
By Jonathan Wright, M. D.

Automobile Control Leag
By Robert W. Shufeldt, M. D.
George F. Bowerman, L. H. D.

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(*Established 1851*)

VICTOR ROBINSON, Ph. C., M. D., Editor

VOLUME 28 NUMBER 4 | APRIL 1921 | NUMBER SEVEN OF NEW SERIES

The Month's Contributors

E. PIRKNER, of Brooklyn, a graduate of the University of Greifswald, recently returned to Germany for additional instruction in psychiatry. To our present issue, he contrbiutes *Therapeutic Principles in the Treatment of Insanity.*

BAYARD HOLMES, of Chicago, contributes his memories of *The Old County Hospital,* this being the third instalment of his *Medical Education in Chicago.* He relates the circumstances which led him to become the first teacher of bacteriology in Chicago.

JONATHAN WRIGHT, of Pleasantville, New York, contributes *The Scientific Method of History Writing.* Dr. Wright is the author of the *History of Laryngology and Rhinology.*

ROBERT WILSON SHUFELDT, of Washington, describes the aftermath of his *The Garage Plague in Washington.* This magazine has recently organized the Automobile Control League, of which Dr. Shufeldt is the first President.

GEORGE FRANKLIN BOWERMAN, of Washington, relies to Dr. Shufeldt's *The Garage Plague in Washington.* He was formerly Librarian of the Wilmington Institute Free Library, of Delaware, and is the present Librarian of the Public Library of the District of Columbia.

MICHAEL RINGER, of New Haven, contributes a brief review of J. J. R. Macleod's *Physiology and Biochemistry in Modern Medicine.* Like Osler, Professor Macleod has become conspicuously identified with both the United States and Canada; will he take the third step and follow the master—to Oxford?

WILLIAM J. FIELDING, of Newark, whose *A Landmark in the Venereal Disease Campaign* appeared in our January issue, contributes to our department *Medical Bookland.* He is the author of two recent volumes, *Sanity in Sex,* and *Psychoanalysis—the Key to Human Behavior.*

ARTHUR E. WHATHAM, of Ontario, Canada, continues his *Studies in Sexology,* contributing *Eroticism in Women.*

GORHAM B. MUNSON, of the international commonwealth, continues *After Office Hours.*

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Modern Therapeutics
Continuing the
MISSISSIPPI VALLEY MEDICAL JOURNAL
DETROIT MEDICAL JOURNAL
NASHVILLE JOURNAL OF MEDICINE AND SURGERY

THERAPEUTIC PRINCIPLES IN THE TREATMENT OF INSANITY

By E. Pirkner, B.A., M.D.

During my recent sojourn in Germany, I devoted nine months to the study of German medical science and practice in their present state of development, and to the modern methods of hospital treatment. Paying special attention to nervous and mental diseases, I visited frequently the clinics and hospitals for the care of the insane, in Dresden, Leipzig and Berlin, and under the guidance of the directors, most of the large well-known state hospitals for the insane in Saxony.

Numerous definitions of insanity are given, and every practitioner and medical investigator summons in his memory the one of his favorite textbook of psychiatry. I wonder how many of us remember the erudite, elaborate literary performances, models of style and learning, which we read with all due respect to their accomplished authors. I leave it to the reader to detect the pith in the still young and growing plant of psycopathic knowledge and terminology, and to formulate it into words which mean the most to each individually.

Insanity is a pathological change of the emotional relations between the patient and his surroundings. Motor action, consciousness comprising conception and orientation, association of ideas as deliberation and conclusion, finally the intellect, are all subservient to the emotions.

"Insanity,' a term frequently employed as common to all mental diseases, is more appropriate and ought to be reserved to designate the disturbances of the emotional life of the patient and for the *symptom* most frequently met with in mental disease. It has always seemed to me an important feature in the biological reactions of an insane that his emotional relations to other minds had become pathologically altered.

Therefore, the therapy of insanity must find its chief task in adjusting the relation of the patient to his surroundings.

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The beginner, especially the young student of medicine in his course in pharmacology, gets a vague idea that belladonna, hyoscyamus, sulfonal, paraldehyde, veronal and other powerful drugs have something to do with the therapy of insanity. They are, indeed, occasionally very useful when employed with proper discretion, but are, to the patient, mere crutches. As crutches, though giving proper support, do not restore damaged or deficient limbs, drugs sustain the functions of sets of nerves and readjust disturbed radiation in brain areas, but may be far from helping to reconnect distempered axons and dendrons.

The most important symptomatic drug combinations and formulæ are:

1a. ℞. Morphini hydrochlor.
Extr. Belladonnæ, aa grain 1/6
Butyri Cocao, drachm ½
Mf suppos. d.t. dos. vi
S. One suppository when required.

1b. ℞. Morph. sulfur. tablets ¼ and ½ for hypodermic use or ready sterilized in solutions of required amounts.

1c. ℞. Extr. hyoscyamini, 5 grains
Morphin. hydrochlor. 2½ grains
Aquæ amygdalar. amarum, ad ½ ounce
Fiat solutio
S. 10 to 20 drops, twice a day.

2a. ℞. Scopolamine hydrobrom. 1/6 grain
Aqu. dest. 2 ounces
Syrup. aurant. cortic. 1 ounce
MDS. Once or twice, one teaspoonful per diem.

2b. ℞. Scopolamini hydrobrom. 1/100 grain (t.t. or pills gelatine coated)
S. One as required, 3 in 24 hours.

3a. ℞. Paraldehyde, 1 to 2 teaspoonfuls in hot tea, one dosis to effect.

3b. ℞. Paraldehyde, 1 drachm
Aquæ, 2½ ounces
Syrup. simpl., 3 drachms
MDS. Half this dosis twice a day.

3c. ℞. Paraldeh., 1 drachm
Aquæ et mucilaginis gummi arab., aa 1 ounce
MDS. As a clysma.

4. ℞. Veronal or veronal sodium, 10 to 20 grains in hot milk.

5. ℞. Sulfonal, 10 grains to ½ drachm in hot milk or tea, one-half hour before retiring.

6. ℞. Chloral hydrate, 50 grains in beer, or ½ drachm in mucilago salep as a clysma.

7. ℞. Opii pulv., 5 grains
Succi liquirit. depuratæ
q.s. fiant pill. xxx
S. 2 pills, t.i.d.

Of these prescriptions, numbers 1, 2, 3a, 3b, are preferred in conditions of mania; 3c, 4, 5, 6, are hypnotics for abating

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insomnia, in large doses to produce sleep, while 7 is the time-honored and still venerated panacea in melancholia.

All of them must be employed in fairly large doses in order to give satisfaction. As is well known, insane patients are, as a rule, remarkably tolerant. Most of the given prescriptions are also useful in the psychoses of hysteria with the reservation that they must not be repeated unless absolutely indicated.

A drug which may be used for a long period of time in all psychoses and which owes its reputation to its efficiency in the various kaleidoscopic changes of neurasthenia, is "New Bornyval," in five-grain gelatine-coated capsules. With the therapy of epilepsy and other brain or spinal diseases, this article does not propose to deal, although it may be mentioned that the bromides are efficient, in the psychopathic stages of the neurasthenic.

It remains then our chief task to treat the patient instead of attacking an offensive brain or squandering ammunition on offensive nerves which will not respond. After an efficient dose of paraldehyde, for instance, the tiny dendrones will remain unresponsive like retracted feelers of a scared snail, and after a tonic dose of nux vomica will remain rigid like the stiff bristles of a matter-of-fact hedgehog, not budging until its relation as accustomed to its surroundings has been restored.

Only the master in psycho-therapeutics knows the satisfaction granted to himself and to the patient by Justice done to the latter. The therapeutics of insanity is an art only to be learned and mastered by experience and keen observation. It cannot be taught in school; it must be learned by living with the patients.

If one desires to re-establish the relations under which a person's emotions are ordinarily sound, one must get to know that person very intimately; moreover, one must apply that knowledge objectively, imagining one's self in the patient's place. It is necessary to know mow that person acts in relation to his customary surroundings and fellows, under ordinary and extraordinary circumstances.

It is necessary for the therapeutist to consider every one as an individual made up of individual somatic and psychic elements. We do not deal with types of patients or definite classes of disease, but rather with types of conditions and circumstances. The latter occur somewhat typically and recur in human lives. In no other special department of Medicine must we be more careful never to forget the principle that we have not cases to treat, but ailing humans trusted to our sympathetic and thoughtful

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handling and care. Indiscrimination means crime; wise discretion is the secret of success.

Ignorance on the part of the physician is extremely detrimental to the patient and greatly disappointing to the doctor, who will feel like the man, not himself a father, with a helpless baby on his hands in a public place. Furthermore, the patient's relatives and friends, in this instance the doctor's public, are very severe and in most cases very unreasonable critics although, or perhaps because they "understand" frequently their insane better than the average medical practitioner who happens to be called in.

Does it then require a congenital talent, a gift, and an unusual amount of tact and patience to become a psycho-therapeutist, a "psychiater"? That I cannot confirm. Personality is undoubtedly a valuable attribute to the doctor dealing with the insane. But more needful is a certain intuition which grows on a specialist who feels sympathy for the sufferer and who devotes his life to the study of those unfortunate victims of circumstances.

The insane are not as apt to be victims of their ignorance, as most of the sufferers of purely somatic disease, for it "requires brain to become insane," as I have heard it expressed in a ghastly, facetious manner by an attendant to the insane. It requires brain and a very well-balanced mind on the part of the doctor to be succesful with psychasthenic and to be always more patient than the patient.

What can we do to become proficient therapeutists in cases of insanity? As family physicians, we lose greatly in prestige when we are confronted with one of these most unfortunate sufferers, and stand there, ignorant, "brother to the ox." We must impose upon ourselves, and upon the students of medicine, the task of learning everything known in the anatomy of the central nervous system and everything in connection with both brain disease and insanity, in order to acquire all the well-established knowledge on the subject and shun and avoid all pseudo-knowledge, to not become confused by, nor entangled in, the rubbish heap of terminology and theory piled up by the zealous disciples of the many different schools. Even some of the text-books are each a kind of pathetic symphony to which a number of composers of very divergent character and understanding have contributed and in which the harmonics are outtuned by the discords.

We must make it incumbent on our students at the seats of learning to acquire all the possible knowledge of the subject which can be obtained from the holders of the chairs of psychiatry, and we must make a successful examination in the entire subject

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one of the conditions for obtaining a license to practice medicine, as is the custom in all the European countries. Such knowledge is the chief foundation for a study of the insane and the mentally disorganized.

Theoretical knowledge must be supplemented by several courses in the diagnosis of diseases of the central nervous apparatus and of insanity, by diligent clinical work at the hospitals for the insane, and in addition by tireless practice among frequenters of out-patient departments, and finally by living at least three months with the patients in a small, properly managed hospital for the insane.

Only through detailed, comprehensive study of brain and nerve anatomy and pathology can a young physician or any beginner learn to understand that many patients are not insane in consequence of pathologic changes in their central-nervous anatomy, but for other reasons to define which in each individual instance becomes the observer's essential duty.

The less complicated the scheme of symptomatology and classification, the greater will be the pleasure with which the student of insanity embarks on his voyage through the oceans of inexhaustible science. The pleasure becomes keener with every marvellously peaceful sunset on the horizon of knowledge and intuitive understanding. Also, the farther we travel, the more the horizon widens and the more desirous we grow to "see and learn it all." And seeing and learning is what redounds to the patient's benefit, with whom we become one in mind, to whom we become "a second brain," as a patient once expressed it to me.

Therefore, the older we grow in the study and observation of the insane, the better we shall be able to judge their condition and understand their needs. It is then that we shall have accumulated experience to enable us to recognize types of circumstances, from which one may conclude that it is an advantage, almost a necessity being advanced in age, in order to grow proficient in the therapeutic art of doing justice to the insane.

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Medical History
Continuing the
MEDICO-HISTORICAL BULLETIN

THE SCIENTIFIC METHOD OF HISTORY WRITING

By Jonathan Wright, M.D.

We are quite evidently entering upon an epoch in which more attention is to be given to the history [1] of the evolution of science and of philosophy than has hitherto occupied our attention. For this, if for no other reason, we may profitably take up a question which began to interest the more self-conscious of the lay historians a number of years ago, but which among them has already passed the culmination of their interest. There still, however, exists a school who think it worth while to insist that the name of history can properly only be applied to those who relate and report the documentary proofs on which rest our knowledge of past events and as their own only contribute the bare conjunctions and prepositions, whereby the transliterated evidence is held together, if one may exaggerate a little in going at once to the logical conclusions of their arguments. I remember once hearing in a board of library trustees a saying of the historian Freeman. Pointing to some records of a village relating to the price paid for kerosene and the cost of putting a new handle in the town pump, he said: "Sir, these are history," and waving his hand at the gilt titles of Gibbon and Macaulay and Thucydides on the shelves he added, "not those." I admit that this is a very important conception of an honorable and useful calling and that its devotees deserve all the praise they are liable to get from the general reader. No one is more ready to do them reverence than I, so ready, indeed, that I have an uneasy feeling of conscience that, if its exclusiveness had not been tacitly somewhat modified of late, the name of history should be abandoned to them altogether by those who have other ideas as to its function.

On my desk before me lies a life [2] of Cervantes, admirable of its kind, who wrote the greatest book in the world, barring none. I have read other lives of Cervantes and some of them have interested and amused me and instructed me and, qualifying the admission a little, so does this post mortem protocol by

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a modern university professor of history. I am hardly ready to say it has amused me in the sense applicable to other histories, and I am interested and instructed,—but not about Cervantes. I know more that is important about Cervantes than the learned professor can tell me, more than any man dead or living can tell me, more than anyone I might read if I lived forever. I have read Don Quixote myself. But I might not have read him and I might want to know something essential about the author of such a famous book. From that point of view I am not interested in the deeds to real estate he had a claim to, nor in the provisions of his mother-in-law's will, nor do I care whether he lived in Valladolid in 1604 or not. What interests me chiefly in the history of Cervantes is the intellectual and psychological nature of the man. From another point of view, of course, I am, quite moderately it is true, interested in and especially I feel myself instructed to know of the different documents which have been discovered relating to these other matters. They are important, of course. I used to realize the importance of a correct count of the white corpuscles of the blood I had to make in days now, thank God, long past. I know many men are interested, a very few perhaps only a little more than moderately, in these things thus told. I know there are many writers of history who, like Freeman, are interested in kerosene and the handle of the town pump. But I have a feeling that in science we are more interested in how men came to think thus and so, that in Cervantes we want to know the author of Don Quixote rather than the son-in-law of Dona Catalina de Palacios. I realize there is a large class of readers (I believe it is the largest class) who are interested in history from another angle than those who stress kerosene and the handle of the town pump, the real estate and the testamentary complications of the mother-in-law of Cervantes. I know there are some very respectable writers of the lay history, even in modern days, who resent the exclusiveness and the narrowness of this conception. Whereas those of the first class deride rhetoric, and some of them seem proud to defy syntax, others believe in writing as carefully as possible. There is no doubt of the preference of the public for the writings of the latter.

It is almost a truism to say that to know the essential part of a great writer one must read him, but in other lives of Cervantes one may read of the dauntless courage and the youthful enthusiasm with which he arose from his sick bed to battle with the enemies of his country and of our civilization. Wounded in

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body and spirit, the same dauntless courage, I know, lay hidden under the insouciance and careless gaiety he exhibited to the world in his old age. I can well believe that he was at times tired of his wife and that his daughters' escapades he had to look upon out of the corner of his ethical eye; but if we must gather from the documents that he trifled with his honor we must know what were the bases and the underlying sentiments of honor in the Spain of Phillip II, or the documents mislead us in the essentials. So it is with the essentials in the history of science. What are we to think of the theories of Galen without a knowledge of the atmosphere in which he lived? When we want to know about Dante's ideas we search not his law record, but the atmosphere that surrounded his genius. So of Science, whether medical or mathematical, we must know of the atmosphere in which it existed, of the literature, the philosophy, the religion, the politics, of the men themselves who cultivated it in times long past. Old and heartsick you may know Cervantes was when he was creating for mankind forever a greater fund of human pleasure than has ever been stored between the leaves of any other book. We cannot know as well any of this from his biographers as from his own work, it is true, mut most emphatically not from the distinguished gentleman who has written according to the most approved rules of the methods of historical science.

Of course, each generation puts the stamp of its taste on contemporary literature and while a few of superlative merit, like Gibbon and Macaulay, are beyond the reach of criticism, as to style, there is much to revolt us in the rhetoric of Schiller and Lamartine; but they did their best to please the taste of the day, and they succeeded. This can hardly be said of the new school whose devotion to facts is more admirable than their lack of attention to the rules of good literature, and they are *not* popular. Their opponents are disposed to think it is the duty of anyone who puts pen to paper in tracing a message for the perusal of others to do it in such a manner that pleasure instead of pain is elicited on reading it. They argue, as I understand it, that no one has any more right to show himself a bore and a nuisance by eccentricity and incoherence of diction in a book than to annoy and disgust his fellowmen in a railroad carriage or in a drawing room. There are rules of good literature, they claim, which cannot be disregarded any more than the rules of good behavior. Bad syntax is as opprobrious as bad manners, incongruous narra-

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tive as bad as an awkward jest or an indelicate story. They admit that history should be placed among the sciences, but they insist that this does not free it from the duty of being well written.

Among men of science, at least among too many of them, rhetoric and good writing is a thing for scorn and contempt. Their critics[3] insinuate, however, that being perhaps a little unfamiliar with humanistic studies, they confound rhetoric with sophism—the art of making "the worse appear the better part." When we say rhetoric is the art of making the truth palatable we assume a more defensible position. I suppose the conventional condemnation of rhetoric has had its ethical root in the belief that artlessness is a necessary attribute of speaking the truth, that clarity means shallowness and muddiness profundity.

Nowhere do we find more difficult and abstruse questions discussed than in the dialogues of Plato, but to plead guilty of having read them brings on one in some circles the ridicule of affectation or it places one in others almost beyond the pale of human sympathy as one made not as other men. At any rate, the mental abstraction necessary for reading them intelligently is scarcely less than that of the weightiest tome full of the dreary obfuscations and the disjointed syntax of the German biologist or psychologist, so far as the subject matter is concerned, but who, familiar with both, would hesitate to explain why one is immortal and the other impossible?

The rustle of the leaves of the plane tree and the whispering of the breeze in the grass on the banks of the stream in the Attic meadow, the water of the brook which cooled their feet with its crystal ripples—the ford across the Illissus to the temple below, frames the picture of Socrates and his disciples discoursing on the nature of mysteries as deep as those of the test tube and the calorimeter.[4] Socrates, lingering behind in the portico to listen to his dæmon while his impatient audience await his coming and finally send for him to tell them at the feast in the house of Agathon of the mysteries which haunt the soul of man, the heartrending art of the Phaedo, the soul-stirring arguments of the Crito, the subtle influence of the lesser Hippias, are the gems which have preserved, for the delectation and the instruction of the hosts of men who have since then passed away and for the countless generations of men yet to come, lessons which lead men to more important destinies than those shaped

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by a knowledge of the tubercle bacillus or the plasmodium malariæ as imparted in the halting periods and stumbling phrases of a thousand modern treatises.[5] Now in the other histories of the life of Cervantes, to return to my flanking attack, one does find some flash of recognition of the inner soul of the man who wrote Don Quixote. That is the kernel most readers seek. They miss it admidst the chaff of testamentary decrees and the dry bones of closet skeletons. To some extent in other books, vastly inferior in scientific research, they are brought in sight of the robust heart of the man, of his philosophy drawn from his bitter struggles in a world of stern realities and unavoidable sorrows for us all. What right has any biographer to put those in the second place and mother-in-law's will in the first place? Are we to get the most important part of our historical instruction from pump handles and kerosene? I am only an humble spectator, I am only echoing out of general literature the protests I have heard made against the scientific conception of history and I seek to bring these to bear on the history of science.

I presume, to drop for a moment the paraphrase of the attacks made on the new school of historians by their critics, the fact is that good writing is to a large extent ascribable to clarity of thought, but also it is to a large extent a psychological innate attribute; it is a temperamental as well as a mental product. The writer is, therefore, in the last analysis, responsible for neither, for our worst and our best traits are born with us and are not acquired characters. Yet, the attempt to write well is a duty, and while the results attained will not be commensurate with the efforts which many of us may make, something at least will have been gained. It is further urged by one school that, in addition to ministering to the æsthetic feelings of civilized man, the historian should likewise appeal to his moral perceptions whereby ethical relations between man and man, but especially between nation and nation, are to be improved. By the other school this is vigorously repudiated. I assume both classes find a common ground in the mutual declaration that they are all humble seekers after truth. The one class desires to limit itself to the setting forth of facts as they find them, the others claim the right to group them in such a way that they will not only add to the reader's knowledge of truth, but to his wisdom, which is inclusive of more than knowledge. The first claim a fact is truth which shines by its own effulgence and their duty ends when they have stated it.

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There is an involuntary tendency to claim, as I have said, that truth in its statement should be unadorned. Perhaps this is so. Concepts drawn from the world of art where, in the classic marble, she stands naked before the world lend support to the idea. Waving aside as immaterial the remark that the artist counts more on the nakedness than on the Truth in attracting attention to his work, we are compelled to consider just what the criterion of "truth' is, not only for the argument's sake already but because it is quite germane to what I shall have to say later, and here to save the time which it would take to say again in different phraseology what I have already once said, I repeat:

"To the observant dilettante or to the ingenuous, earnest student—if one can be called such who flits often across the whole domain in which truth is sought, it is apparent that different tests are applied to the genuineness of the information acquired. The physicist concludes he has something material because when his electrons are fired through a tube he can see the flash and so count them. The physiologist or the biochemist concludes a certain organic juice is present because he can perceive the effects of its diastase or the serologist can see the clouding or clearing of the fluid in his test tube. The geologist draws certain conclusions from the scar on the hillside or river bank, the archaeologist from the presence or absence of certain forms of the architrave or of certain metals in the implements he finds. Such evidence for the establishment of facts as is satisfactory to the sociologist or psychologist or archaeologist is scorned by the astronomer and the physicist, while the statistician is still more intolerant."

In taking up the study of the history of medical thought we turn to Hippocrates or perhaps to Galen, since their works alone have come down to us from the Graeco-Roman period in such volume as to allow us at least a formal grasp upon their thoughts. We find ourselves at once involved in a quagmire of uncertainties. Why did they believe this? Why did they say that? Above all what does three quarters of all they have written signify unless we get at the springs of it, not alone the formal materialistic foundations of so called fact, but at those imponderables which so weightily move even the scientific beliefs of men? Now we grope amidst the cryptic of Plato and the deep sea submergence of the thought of Heraclitus and now

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through the mystic chants of Empedocles, the thaumaturge. These are the things we rest on. We do undeniably see more clearly into a modicum of the mass of mystery which makes up three-fourths of the whole in the writings of the fathers of medicine if we become familiar with these mysticisms. They may not be facts, but we see the excursion into the environment works. It meets the demands of modern pragmatic philosophy. It is neither the pump handle nor kerosene, but in the long run the use we make of the imponderables is of more value than the minutes of the town meetings in elucidating what to us is vital, though they have their value too. These imponderables do not perhaps like them reveal to us the economic situation of labor and market values, but they do help us to pry into the intellectual processes of the mighty mind of Hippocrates and the gentle soul of Cervantes. But let us leave that and turn to another note of mine bearing upon the subject of this essay from another field.

In a certain anthropological publication, there is an account of the reasoning by primitive men as to the cause of disease or, what was the same to them, the seat of pain. There was a find made of marked human bones in a prehistorical burial place in Mexico. One of the authors of the memoir discussing it was led to believe, evidently from his previous experience in familiarizing himself with the beliefs and the ways of thought of the Mexican Indians—that the marks on these bones were magic ones meant to sever all connection between the patient's spirit and his former earthly surroundings and from the disease which caused his death. The most prevalent complaint among these Indians is rheumatism. They also have headache. They know there is soft matter unlike other flesh inside the skull and also inside the shafts of the long bones. It is all "brain" or all "marrow" to them. Their differentiation of diseases, from few of which they suffered was disease of the flesh and disease of the bones. The rheumatic pains and the headache, not totally different in the sensations felt, had their seat in the matter unlike flesh, yet soft, which is inside the skull and the long bones. Hence headaches and rheumatic pains belong in the same class. Now the deductions here are all very sane ones and much in accord with our own mental processes, a coincidence unfortunately we would find all too rare were we to pursue the phantom of primitive man's mentality, but actual knowledge as to the pre-

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mises is lacking—yet this is something which is always lacking to-day as well, though not as much as 6,000 years ago. The exponent of the Indian thought goes on to say if a disease has been so obstinate as to yield in no wise to the Shaman's effort and to cause death, the Indians think that the pain of disease will continue after death and vex the ghost, making him malignant and troublesome, the pantheistic doctrines of primitive man taking the form of personifying every phenomenon, even the abstract one of disease, as a spirit or a ghost. Therefore the pain has to be conquered and driven away from the bones and marrow. By his incantations and his mystic marks, the Shaman was the fellow who could do this and these are the traces of his activity preserved to us in the resistant bones, scraped of their flesh for the purpose, perhaps thousands of years ago.

I am sure there are some at first impulse who would feel inclined to cite the illustration I have used as a "horrible example" of the danger into which one falls when one attempts to draw deductions from such facts. The information, both as to fact and as to deduction, on the part of the modern anthropologists may or may not withstand the tendencies to oblivion which time usually brings, but I am convinced that unless those primitive Mexicans had hung around an observation very much which is false in theory, we would have lost a great deal which, thus picked up, incidently is of great value to us. Hang around the description of the ancient antomist or that of the modern scientists a fancy cobweb of theory and dazzling deduction and the fact itself is burned into the social inheritance of the race, civilized or uncivilized, to persist long after the theories that depended upon it—until perhaps it has become surrounded by a halo of truth, which finally eclipses them. This is the course of most facts which prove of use. All facts quickly perish unless utilized either in the service of error or of truth.

An eloquent mystic from India[8] reminds us: "To go through the history of the development of science is to go through the maze of mistakes it made current at different times. Yet no one really believes that science is the one perfect mode of disseminating mistakes. The progressive ascertainment of truth is the important thing to remember in the history of science, not its innumerable mistakes."

"From the earliest times man has been engaged in a search for general rules whereby to turn the order of natural phenomena to his own advantage and in the long search he has scraped together a great hoard of such maxims, some of them golden and some of them mere dross. The true or golden rules contitute the body of applied science which we call the arts; the false are magic.[9]

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Whether or not truth is eternal and will prevail, there is no fallacy so prevalent and so pernicious among scientific men as the belief that a fact will shine by its own effulgence and I presume something of the kind lies back of the argument of the class of historians with whom I have not avowed sympathy. These materialistic writers, for this is the category in which at present we most naturally place them, might object that if we are going to hang around every new advance from the mentality of the mystic to the mastery of the materialist, a fluttering decoration of old wives' tales and fears, this world will soon be a fool's paradise. For those, however, who do not believe in the possibility of the attainment or in the past existence of a golden age of absolute truth, it is necessary to write history anew for each generation.

At any rate surely it is folly so to use facts as to make them inaccessible to fools who need them and save them only for philosophers who can get along without assistance. For my part, belonging as I do to the majority among the billions referred to in such an uncomplimentary way by Carlyle, I cannot help believing that it is desirable, even at the expense of resigning the title of historian, to try to draw some rules of guidance from past experience in regulating our conduct for the future not only as laymen, but, in the present concern, as men of science seeking a basis for the ethical as well as for the scientific construction of our lives. A recent French lecturer in science has defined history as "the knowledge of the laws which govern the moral and the intellectual world."[10] According to this, History is therefore a dependent of Psychology and of Ethics. It is related of Johnson that, when delivering his usual sledge hammer blows many generations ago for the cause which a new generation has espoused, he was attacked by the usually subservient Boswell, "Then, sir, you would reduce all history to no better than an almanac."

[1] The hope cherished by Bacon and Descartes that the moderns might at length cut themselves loose from the past and, by an infallible method, discover all attainable truth has long been seen to be vain. . . . *The Neo-Platonists—A Study in the History of Hellenism,* by Thomas Whittaker, 2nd ed., 1918, Cambridge University Press.

[2] *Miguel de Cervantes Saavedra,* a memoir by James Fitzmaurice Kelly, Clarendon Press.

[3] This inelegance of diction in science is blamed by the French on the Germans. A recent writer emphatically declares: "J'insiste: les erudits ont tort de ne pas veiller a notre plaisir. Cette negligence, a l'endroit de notre plaisir, n'est pas fort ancienne chez nous. Et d'ou vient-elle? D'Allemagne! L'influence Allemande chez nous. C'est ici qu'on peut la surpreudre."

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[4] I see, since this was written, in a current popular magazine, Plato was the greatest of novelists.

[5] Res verbonas verbi selectis graviter ornateque dictas quis non legat? Cireco: De finibus bonorum et malorum, Lib. I, cap. 3, 8.

[6] *Popular Science Monthly*, February, 1915.

[7] Lumholz, Carl and Hrdlicka, Ales: Marked Human Bones from a Prehistoric Tarasca Burial Place in the State of Michoacan, Mexico. Bulletin of the American Museum of Natural History, No. 10.

[8] Rabindranath Tagore: *Sadhana, the Realization of Life*, p. 48, Macmillan, 1915, N. Y.

[9] Frazer, J. G.: *The Golden Bough—The Magic Art*, vol. 1, p. 222.

[10] LeClerc du Sablou: *Les Incertitudes de la Biologie.*

MEDICAL EDUCATION IN CHICAGO
IN 1882 AND AFTER

By Bayard Holmes, B. S., M. D.
Formerly Professor of Surgery, Medical Department of the University of Illinois

III—THE OLD COUNTY HOSPITAL

The medical student body of the three medical colleges near the County Hospital met on familiar terms in 1882 at hospital clinics and at the tables of their boarding houses, where they discussed college affairs and the stories of their professors. It was from such associations that I first learned the sectarian relations of Homeopathy at one of whose schools I had ignorantly matriculated. The County Hospital clinics were conducted in the old amphitheatre by the medical, surgical, gynecologic and obstetric professors of the colleges, and these clinics were all open to students who had purchased the thick red card that was exhibited to the doorman on entrance. This ticket cost five dollars, and no other bit of cardboard ever aroused so much interest in my mind and imagination as this did. It was red, smooth, thick, and round cornered, and my name was written on it in Roger Sullivan's unmistakable hand. It was signed with the flourish of James J. McGarigle, the warden, in the blackest and the shiniest ink. When I looked at this card it seemed to invite me into the great hospital, whose rows of windows aroused my daily curiosity, whose unseen wards my imagination filled with the suffering and dying whom it would soon be my duty to relieve or cure. This shiny pasteboard promised me the otherwise unattainable. There was a high wooden picket fence about the County Hospital in those days, and the space between the fence and the red brick buildings was depressed four feet or more. The paved streets had been graded up that much above the datum on which the hospital had been

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built. In this depressed grassy space the convalescents were often to been seen grouped about, talking, smoking, or even playing games. My first knowledge of splints and bandages came from observations of these unfortunates through the pickets, as I was passing to and from the medical school.

At that time the Hospital was run on liberal allowances. The Illinois Training School for Nurses had but recently been established, and the nursing of the hospital had been taken out of the hands of the untrained and unspeakable political appointees. This was so complete a change that the wards for male medical and surgical patients were cared for by uniformed female nurses in training, with one graduate head nurse over each ward. It was an impressive sight to see the line of capped and striped nurses marching ceaselessly from the hospital to the Nurses Home or from the Home to the hospital at their various meal times. The Chicago Woman's Club was responsible for this reform, and Mrs. Lucy B. Flower, one of the pioneer lawyer women of Chicago, should be remembered for her devotion to this epoch-making innovation. Antiseptic surgery could never have made the headway it did in the 80's had not the trained nurse preceded it in the hospital wards.

Some wards were reserved for the old gang, however. One of these was the Emergency Surgical Ward and the other was the contagious ward, of each of which dramatic memories remain. One of my first clinics at the County Hospital Amphitheatre was conducted by Dr. John Baxter. He was a type of the preantiseptic surgeon education under the tutelage of Daniel Brainerd, Moses Gunn, and Edmund Andrews. He came into the arena followed by his internes, his nurses and his patient, the last already anesthetised with ether. The patient was as big and fat as the surgeon, who immediately gave a brief lecture on hernias as the right inguinal region was being prepared by the interne. His remarks were brief and practical, given in a bluff, unhesitating manner, and followed by what seemed to me then a tragic assault on the patient, with a glistening six-inch knife. During this excited attack the surgeon was silent, and so was the crowded amphitheatre. All the students were gazing intently at the narrow field of operation which was constantly and hurriedly sponged, retracted, and grasped with artery forceps flying about like shuttles. At a critical moment, the operator suddenly stopped, raised his knife and bloody hands high in the air and with tragic face and voice blurted out, "My God, I have cut the gut!"

No one of the three hundred students in the amphitheatre uttered a sound or moved a foot. The operation was resumed with accustomed haste and finished, I know not how. The sky

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seemed to me suddenly overcast, a strange commotion in my abdominal viscera prompted me to leave the show and fumble my way up to the top of the amphitheatre and down the narrow stairway to fresh air and a place beside a crippled patient on a garden seat. There the blood came back into my circulation and I thought it all over. A great distaste for surgical hurry and haste, display and show came over me, and operations for hernia in particular have been my aversion ever since.

But while in Florence in 1899 it was my privilege to see Professor Ceni operate for hernia on large numbers of recruits. He sometimes had fifteen such patients of a morning after his didactic surgical lecture. They were all young men. They had each been stripped, scrubbed up, strapped to an operating table, and anesthetised in an adjoining room. As one operation was finished, Ceni and his assistants washed and passed into the alternate operating room, where the next patient was waiting. Each operation required but six or eight minutes. A ligature was rarely necessary. Ceni used twisted Florentine silk sutures and rarely more than three in the ligament. The upper tying was executed with great care, the other stitches were rapidly but not hastily put in without flourish. One assistant handled the needles and silk. The room was quiet and there were no students about. The dressings were massive and permanent absorbent material looking like engine waste. They were not removed or the wound inspected until two weeks after th operation.

The amphitheatre of the old County Hospital held more than 300 students. In 1882-3 clinics were held there on every afternoon and on some mornings. I remembered in particular one clinic on typhoid fever given by Dr. J. S. Mitchell, the professor of medicine in the Chicago Homeopathic College. Dr. Mitchell was a clean-cut, cultured gentleman, who seemed to have a reserve and a modesty becoming a studious physician. He began his lecture by frankly stating his distrust of the micro-organismal theory of the cause of the disease which was then receiving newspaper attention, and he dropped at once into the clinical history of the complaint.

He showed a patient presenting the symptoms of the prodromal period, in which case the diagnosis was still uncertain. He took his pulse and the temperature before us, and called attention to the incoordination between the evening rise of temperature and the lagging pulse. The next patient was in bed. He passed around among us the temperature record, which had been carefully charted for the first week of the disease, and called attention to the very slight acceleration of the pulse. He compared the tongue of this patient with the tongue of the one in the

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prodromal stage. He uncovered the abdomen, showed us one by one the rose spots on the second patient, and on occasion called attention to the little cough which we might have overlooked. He selected one or two senior students to examine the chest of the patient with the stethescope, and describe the auscultatory findings. Several other patients were presented lying in their beds, each succeeding one with a longer temperature chart, thus exhibiting the gradual decline of the fever. Much attention was given the gurgling in the right inguinal region, and the number and the conditions of the stools.

One patient was presented whose temperature chart extended over three months and indicated a relapse. Homeopathic treatment was outlined and extolled, and the necessity of a liquid diet was insisted upon.

One cannot contemplate the negativistic attitude of mind of this very conscientious and intelligent man toward the teachings of bacteriology in 1882, without serious personal and professional application. At that time there were less than 800 beds in the County Hospital, and one-third of them were filled with typhoid fever patients from July to February. There was much serious talk about sewer gas in the etiology of typhoid and diphtheria, but only contemptuous reference to the tubercle bacillus and the diphtheria and typhoid germs as the cause of these diseases.

During the winter vacation of 1882-3, I took a short course in dry assaying at the Hoskins Laboratory, on Clark Street, opposite the County Court House. This course was interesting in itself, but important because it centered my attention upon the Momence Beef Poisoning that occurred that winter. Momence had never been heard of until some dried beef was sold by a grocer of that village on a certain afternoon, the day and date of which will be readily given by many old residents of that town and the next day half-a-dozen citizens who ate of it were dead, and three dozen or more were sick unto death.

Some of this dried beef was brought to the Hoskins Laboratory by a newspaper man for examination for newspaper use. Portions of the beef were fed to dogs and cats, and sections were mounted and photographed with the new dry plates, and the Douglas microphotographic camera. We also made some drawings showing the cocci in masses between the muscle fibers. Although I had never doubted the bacterial origin of disease, my whole attention was powerfully turned to the study of bacteriology from this time forth and six years later I became the first teacher of bacteriology in any medical school in Chicago.

Up to this Christmas time my visits to the County Hospital

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had been confined to the amphitheatre and the morgue; I had never been in any ward. Some of my work at the Hoskins Laboratory had been delayed until the vacation was over and taken to Dr. Clifford Mitchell's laboratory at the Homeopathic College to be finished. This was the wet assaying which paralleled the dry work. Thus my interest and skill in recognizing minerals was advertised. The Homeopathic internes at the County Hospital wanted the stomach contents examined in three cases of suspected arsenic poisoning. They asked me to make these examinations for them at the County Hospital Laboratory. Of course I was delighted to take up this work, and although no poisons were found in any of these stomachs, it early opened the wards of the hospital to my curious inspection.

The laboratory was near the office of the training school and I came to know the first superintendent of the Illinois Training School, who afterward married Professor Halstead of Baltimore, and Miss Brown, her assistant, who married Dr. Richard Dewey. I was ten years older than most medical students and had been a teacher and school principal several years before I began the study of medicine. I sympathized with the many difficulties of administration of the training school and took an interest in solving them on account of my own administrative experiences in schools and teachers' institutes. One of their problems in which I took an active and prolonged interest, was the ward toilet and bathroom problem. The architects and plumbers had had an early inning, the results of which could never be entirely overcome. Our great effort was to secure light for the stools, and to separate the bathtubs from the washrooms and the toilets. We removed partitions and set up screens, and had conferences with the warden, the commissioners, and the plumbers, but it was never possible to make one toilet room less than sixteen feet square do satisfactory service for sixty-three patients in a medical or surgical ward.

Each pavilion of the old County Hospital had a basement, and three floors used for four wards, each identical in floor space but of varying heights. The basement was eight feet, the two wards above it were each fourteen feet between ceiling and floor, and the top floor was twelve feet with dormer windows. The ventilation was complicated and never satisfactory, especially in the top and the basement wards. The fresh air intake was in the garden house between the wards, and I found, after much trouble in getting the keys to this intake house, that the bathroom man of the receiving room hung the dirty, lousy discarded clothes of his patients in there to air.

The basement floor in the pavillion was a men's venereal ward,

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and the attic ward on the same side was a women's medical ward. These wards were always crowded, and hard to keep warm and at the same time to ventilate. There seemed to be no one who understood the system of ventilation originally installed, and the drafts and intakes had frequently been covered over with boards or pasted over with paper. The winter of 1882-3 was cold, and heating of the wards frequently inadequate. The hospital became crowded by Christmas and the tower rooms were filled with extra beds and bedding, that was hauled out by convalescent patients and set up or spread out on the floor of the corridors at night. Many convalescents were sent out to the Poor House at Dunning until that place was scandalously overcrowded.

During this winter, beside my school work, I read hospital construction and hospital management in the medical department of the Chicago Public Library, which was in the top floor of the City Hall, and in W. T. Keener's medical bookstore in a half basement at 77 Washington Street, between Dearborn and Clark Streets. The new Johns Hopkins Hospital plans were just published by John S. Billings, and there was a monograph out which I bought and studied. This side line, with the major interest which the Momence ptomaine poisoning had aroused, kept me busy from morning to night. The homeopathic internes frequently called upon me for some chemical or microscopic work and other routine duties in the wards and the whole County Hospital was open to me as to few of the first-year students. In those days there were many cases of suicidal opium poisoning, and I became familiar with the use of the stomach tube and learned to walk the half-sleeping patients up and down the corridors. This was good exercise for a big, stout undergraduate.

Origin of College Yells

Professor Karl Pearson, expressed the view that the origin of all college yells might be found in the matrimonial call of the primitive anthropoids. Professor Pearson, as everyone knows, is an authority on questions of this kind, but I can not help wondering why the anthropoids should make so much noise over the simple matter of marriage; most college yells in my judgment at any rate, are calculated to scare all thought of matrimony out of the most amorous orang-outang who ever cracked a nut.

JOURNEYMAN, *The Freeman.*

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CORRESPONDENCE

THE AUTOMOBILE CONTROL LEAGUE

I

To the Editor: As to your proposition to form an Automobile Control League, I am with you—solid. And I shall be glad to accept the honor you extend to me in your letter and assume the position of its first President with pleasure.

You will agree with me, I think, that the machine, as a machine, is here to stay, and to attempt to completely abolish it would be futile. On the other hand, should we organize an association to protect the people of this country against the slaughter now being done by this machine, we may, and probably will, succeed in reducing the menace and the killing to the lowest possible percentage. I shall be glad to hear from you further on this important subject.

R. W. SHUFELDT, M.D.

II

To the Editor: The Automobile Control League should give full printed publicity to all automobile murders or other injuries; to all accidents, whether the result of carelessness or otherwise, where property of any sort whatever is either damaged or destroyed; to the exposing of cases where the automobile is responsible for any annoyances, a menace to health and comfort, and so on. Indeed, we should turn the searchlight on everything of an undesirable nature, where the machine is the cause of it.

I heartily approve of your idea to run an official bulletin in MEDICAL LIFE, giving the activities of the League, with brief accounts of the automobile murders, and any other matters of interest along related lines. Had we a good attorney in the League, we might handle many cases along legal lines, and suggest the necessary action to be undertaken in any particular case of injury or murder.

R. W. SHUFELDT, M.D.

III

To the Editor: My automobile article in MEDICAL LIFE seems to have appealed to a number of people of prominence in this city, and I am enclosing you one that came in my mail this morning. It is from Dr. W. C. Fowler, the Chief Health Officer of the District of Columbia; I have already sent you Commissioner

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Oyster's letter, and one from Dr. George F. Bowerman, the Librarian of the Public Library of the District of Columbia. I wish we could get Dr. Bowerman's permission to publish his letter in MEDICAL LIFE, and the reply I made to it.

Dr. J. Danforth Taylor, a well-known physician of Boston, writes me to the effect that "the city garage is indeed a menace in more ways than one, and deserves all the knocks you gave it in MEDICAL LIFE."

R. W. SHUFELDT, M.D.

IV

To Dr. Bowerman: In addition to Commissioner Oyster and others, I sent a copy of MEDICAL LIFE to Dr. W. C. Fowler, Health Officer of the District of Columbia, containing my article on "The Garage Plague in Washington." In his letter of acknowledgment Doctor Fowler was good enough to say that "I have read this article with a great deal of interest and fully appreciate the conditions described by you." I also have letters from physicians of other cities, fully endorsing my views on this subject.

A while ago, I wrote Dr. Victor Robinson, Editor of MEDICAL LIFE, that you had been so kind as to write me a most excellent letter on this subject, and he now desires to know whether you would be good enough to allow him to publish the same in MEDICAL LIFE, with others of similar purport.

I trust you may see your way, Doctor, to granting this request, as the time will surely be at hand when measures will have to be taken by city officers to protect the people against the injuries that this machine is now wholly responsible for, as I have pointed out in various publications.

R. W. SHUFELDT, M.D.

V

To Dr. Shufeldt: If you think my letter of March 31 worth printing in MEDICAL LIFE, you are welcome to do so.

I am glad to learn that you have succeeded in enlisting the interest of so many people. I suggest that you send copies of your article to the officers of the American Automobile Association. They are very keen to sense the various phases of public opinion with reference to automobiles and any of the difficulties attendant upon their use.

G. F. BOWERMAN, L.H.D.

VI (The letter referred to in III, IV, V)

To Dr. Shufeldt: From time to time you are kind enough to send this library copies of your articles. We are very glad indeed to get them. Ordinarily I let them pass without comment. I wish, however, to comment on your article entitled "The Garage Plague

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in Washington," contained in the February number of MEDICAL LIFE. With much that you write I sympathize. However, I do not quite understand the full force of your reasoning. Would you mean to eliminate automobiles entirely from modern life and with them the garages necessary for their housing? Do you not believe that the automobile is here to stay and that we are to have more and more of them every year if gasoline or other forms of fuel hold out? That seems to me inevitable.

Cities were not laid out with the expectation that garages would be built on alleys, but where else can they be put? Must we not accept them as something inevitable in our modern life? The noise, dirt, and gas fumes are trying. Must our efforts not be directed to mitigating these things rather than unreasonably expect to eliminate them altogether? It seems to me that is the only sensible course to follow.

In treating of the health aspects of the automobile, ought you not in fairness to have given some attention to the positive benefits derived from the automobile? I would mention, for example, that six years ago Mrs. Bowerman was in very poor health and that her trouble did not yield to medical science. After fruitless efforts expended in various directions, we finally secured a modest automobile with the result that she has been restored to a reasonable degree of health. She simply needed to be out-of doors a great deal but was not strong enough to walk much. I believe that the same condition is true in a very large number of cases. To eliminate the automobile in this and similar cases would be very harmful.

I suppose you have sent copies of your article to the Commissioners of the District of Columbia. It would seem to me that some of the evils to which you refer might be mitigated, if not corrected, by proper administrative action.

G. F. BOWERMAN, L.H.D.

VII

To Dr. Bowerman: It affords me pleasure to thank you for your very courteous letter of the thirty-first ultimo, and I was glad to know that my article in MEDICAL LIFE on "The Garage Plague in Washington" interested you to the extent that it did.

With you, I fully believe that the automobile is here to stay —that is, until some better vehicle is invented to supplant it. This latter will gradually materialize, provided our race becomes more refined, advanced, and our civilization markedly improves in all particulars. It may come about that some form of electric automobile will, in the far future, take the place of the present general type of fuel-driven concern.

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You will note that my article in no way touched upon the point you bring up in your letter—that is, what might be done by way of investigating this nation-wide menace to health, safety and general comfort. In this connection, it may interest you to know that within the last fortnight there has been organized in New York City the "Automobile Control League," and I have accepted the presidency of it.

I would be very glad indeed to hear what you have to say along the lines of this menace, especially on such points as the effect on individuals through these noises at night, the gas fumes, and the accidents and killings. Is it possible to mitigate any one of these?

You ask me where else can garages be put aside from the alleys where they now are, to such a large extent, built upon. The answer is this: The erection and proper maintainance of public garages, in suitable localities, and laws passed that automobile owners be compelled to keep their cars or other auto. vehicles in them. Livery stables are still maintained in this way—and properly so.

I am glad that Mrs. Bowerman improved under the treatment you mention—the open air obtained through trips in your automobile; and, as you point out, there are doubtless many other cases of a similar sort. However, such cases are far outnumbered by the ones that owe their loss of health or life to the automobile. Last year (1920) there were upwards of 7,000 killings in this country through this source alone; and thousands of cases, under medical treatment in homes, put back or failed entirely to recover through the various factors due to the automobile, which I have, in part, enumerated in my article.

R. W. SHUFELDT, M.D.

Our Unsafe Thoroughfares

In the mounting mortality due to reckless automobile driving there is one plain enough factor, and that is the demoralization of the lower order of chauffeur by bad whiskey and drugs. A common sight in and about many garages is the empty flask of the hip-pocket variety. But more enlightening still is the conduct on the road of the roughneck type of driver.

EDITORIAL, *Medical Times*.

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Polyvalent Bacterial Vaccines

To the Editor: In the January issue, 1921, of your valued Journal of Contemporary and Historical Medicine, MEDICAL LIFE, page 6, an article under the title of "Influenza Vaccine," which purports to be an historical version on the accomplishments of bacterial vaccines in the prevention and treatment of influenza, signed by "A. L.," Chicago, interests us very much.

Evidently, the author is not familiar with the difference between the prophylactic and the therapeutic action of vaccines prepared from single strain organisms as compared to the action of polyvalent vaccines prepared from a variety of selected, healthy and vigorous strains, otherwise he would not have cited Dr. McCoy as the final historical judge concerning the uselessness or usefulness of vaccines in the prevention and treatment of influenza.

Dr. McCoy's clinical research with the influenza vaccines and the conclusions derived have been in main with single strain of bacteria vaccines.

The bibliography on polyvalent bacterial vaccines founded on comparative clinical studies does not confirm Dr. McCoy's position. On the contrary, an eminent medical critic like Professor Frederick P. Gay of the University of California, in discussing the use of mixed bacterial vaccines in the prevention and treatment of influenza and its complications, in the *Journal A. M. A.* of January 22nd, page 244, says in part:

> There is a steadily growing body of information, some of it of apparently critical value, that would seem to indicate that a mixed vaccine containing staphylococcus and pneumococcus in combination to influenza bacilli will notably decrease the pneumonia complications of influenza.

As for influenza itself, we can say that a distinctly diminished incident of disease has been apparently demonstrated in those vaccinated as compared to those not vaccinated. Clinicians who have used vaccines extensively in the two recent epidemics know this to be the truth.

To bring forth the unsubstantiated appraisement by the author of the uselessness of bacterial vaccines in the treatment and prevention of influenza, it is appropriate to state the last two paragraphs in toto:

> Now, only after a lapse of only two years, one can hardly find a dozen people in the country who still consider vaccine of prophylactic or curative value in influenza. Matters have so turned that those workers who, during the height of the epidemic were haled as heroes and as saviors of humanity, are now looked upon as persons who jumped to conclusions prematurely and whose work is not of lasting value.

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The story of Influenza Vaccine teaches one that not every remedy used extensively during an epidemic can survive the epidemic and that not every article written in medical journals during the time of stress can be considered classic literature. A person who really understands medical history knows that remedies come and go, that remedies may be just as much of a fad as the style of dress, and that a remedy cannot be considered valuable unless it withstands the acid test of time.

It must be admitted that no one is free from preconceived ideas. Every man who assumes the authority of a critic, no matter how highly he may be developed, exhibits an element of inherited instincts which compel him to look upon things as through certain lenses, which play an important part. As an adherent and admirer of the Old School of Therapeutics, he writes and represents their position as against the new one. He involuntarily loses sight of and sometimes conscientiously will pass by many facts that are founded on animal experimentation as well as clinical experience, to which a representative of modern therapeutics will give particular attention.

Conservatism in therapeutics is eminently necessary; nevertheless in the treatment of infectious disease the utilization of all the knowledge we have at our command is imperative. This truth is known to every doctor who performs conscientiously his socially useful duty in preventing and treating disease.

Criticism in therapeutics, made in good faith, with intelligence and understanding, is very helpful and must of necessity carry with it useful and applicable information.

The writer fully appreciates that no remedy can be "considered valuable unless it withstands the acid test of time."

It is hard, however, to understand how a great many well-meaning members of the profession do sometimes withhold the acceptance of facts dictated by the teachings of clinical experience, and cling to the ultra-scientific deductions. Facts and not opinions are the elements that make enlightened knowledge possible in the progress of applied therapeutics.

Medical science is regarded as classified knowledge and recognized as such, it must be arranged or so worked out that it can be applied to the best service of human society. The progress of any therapeutic remedy is not measured by theoretical conceptions, but by the results obtained in its practical application. The contention for the advantages of any therapeutic remedy, whether presented by a professor of therapeutics in a medical college or by a humble practitioner, must be equally amenable to proof and, dealing with vaccine therapy, it must be remembered that more than a decade and a half has elapsed since the use of bacterial vaccines in the treatment of infectious diseases was first begun;

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and it may be fairly said that any method of treatment which has passed through so long, so rigid and so thorough a probationary period must be ready for appraisement. The storm of extravagant enthusiasms with which a new remedy is apt to be greeted, has certainly passed after fifteen years; there has been sufficient time to ascertain whether theoretical presumptions are borne out by practical experience; and, indeed, there must exist a great mass of actual proof, tangible and verifiable data, clear and conclusive findings, necessary for a final judgment.

It may be said that in modern medicine no absolutely worthless remedy has had more than a brief existence in the medical armamentarium. When, therefore, a therapeutic procedure is more widely employed day by day, month by month, year by year, when it never loses but gains in clinical appreciation, there is at least a strong presumption in favor of it. This applies to the standardized polyvalent stock vaccines. They have obtained such support as the law of the survival of the fittest is capable of supplying.

A. M. ROVIN.

Spectacular Epidemics

It is unfortunate that the public becomes so intensely interested in spectacular epidemic outbreaks of disease and is so little moved by the daily occurrence of many preventable deaths in all parts of the country. Of the one and one-quarter million deaths occurring in the United States annually, at least 100,000 could easily be prevented by the application of available medical knowledge.

H. S. CUMMING, *Health News U. S. Public Health Service.*

Nephritis After Influenza

You cannot tell whether the child with influenza has a nephritis until you examine the urine, and yet how many of us make examination of the urine in cases of children? Neglect to do so is not an infrequent thing. I saw the idol of a family swept out within the week because of nephritis following influenza. These cases are not uncommon. At the recent meeting of the American Medical Association, one of our own members in attendance there heard with a breaking heart a man of prominence in pediatrics refer to the horrible certainty of death in these cases of nephritis following influenza.

FRANK M. FULLER, *Journal Iowa State Medical Society.*

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Medical Bookland

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A League of Laboratory and Clinical Medicine

Physiology and Biochemistry in Modern Medicine, by J. J. R. MACLEOD. Third edition, $10.00. St. Louis: C. V. Mosby Company.

Some day medicine will be re-written and the new writing will be based on the conception that disease is a perverted function. On that day clinical medicine and laboratory medicine will become one, not through a victory of either but through a league. Dr. Macleod in his book on *Physiology and Biochemistry in Modern Medicine* has hastened the coming of that day, for in it he teaches how the data of these sciences are at the service of medicine.

It is a thousand page text-book designed to give students of Physiology the clinical applications, and to clinicians the physiological viewpoint. The whole realm of physiology, physical and chemical, is covered and brought up to date. It is lucidly written and the discussions are concise yet sufficient. The illustrations are numerous and instructive. A bibliography at the end of each subject gives leads to more detailed accounts.

It begins with an exposition of physicochemical fundamentals, which the physician who was trained before the time when hydrogen ion concentrations and colloids were matters of consequence, will find especially valuable. It then passes to a very solid account of the circulation and the many recent clinical applications, including a chapter on Shock. The division on respiration includes a discussion of the newer chemistry and such practical problems as the therapeusis of oxygen, principles of ventilation, functional capacity of the heart. Digestion and excretion are well handled. Metabolism is given especially full treatment in a division where the physician will find the newer knowledge on vitamines, diabetes, acidosis and blood chemistry. The division on Endocrinology, the nervous system, and the recent developments in neuromuscular physiology are adequate.

To the physician who has felt the dubious intellectual triumph of identifying disease by the empirical grouping of signs and symptoms, and has longed for a more mechanistic understanding of disease this book offers fresh viewpoints and a wealth of stimulating ideas.

MICHAEL RINGER, M.D.

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Childhood Problems.

The Problem of the Nervous Child, by ELIDA EVANS. Introduction by Dr. C. G. Jung. $2.50. New York: Dodd, Mead & Co.

This book might well be read by all physicians, as well as teachers and parents. It is based on the solid bedrock of experience, plus an intimate knowledge of analytic psychology—which in itself offers new hope to a clearer understanding of the child-mind.

That no less an authority than Dr. Jung, of Zurich, should write an introduction to the book is ample testimony of the standing of Mrs. Evans in her profession. In the introduction, Dr. Jung emphasizes the fact that most of the neuroses originate from a wrong psychological attitude which hinders the adjustment to the environment or to the individual's own requirements. Mrs. Evans lays much stress on the parents' mental attitude and its importance for the child's psychology.

Referring to the enormous power of imitation in children, Dr. Jung comments that he has frequently observed children who are particularly influenced by certain unconscious tendencies of the parents and, in such cases, he has often advised treatment of the mother rather than of the child. Through the enlightenment of the parents, their wrong influences can at least be minimized or avoided, and thus much can be done for the prevention of later neuroses in the children.

Indeed, it is not new to suggest treating other members of the family, rather than, or as well as, the neurotic patient. It is the general experience of psychoanalytic practitioners that in order to obtain satisfactory results, it is often necessary to give at least rational advice to members of the family who are closest in touch with the patient. An outstanding illustration of this is instanced in a famous case of Dr. Edward J. Kempf, who in treating for dementia præcox had to devote considerable time to counseling the husband, father and mother of the victim.

Mrs. Evans puts much emphasis on the point that we should not expect too much in an intellectual way from children, and discourages the tendency to try and make prodigies out of infants or young people. Childhood should be a process of gradual, progressive growth, physical and mental, with full opportunities for an outlet for the playful, emotional side of the young, and not an attempt to cram the undeveloped mind with a lot of predigested information, greatly beyond its capacity for assimilation.

The author well says: "As soon as the child can use words, he is almost universally, by parent and teacher alike, supposed to

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be able to reason with the thoughts which these words represent to adults—a very illogical supposition for the adult to make. If the child's physical ability to say 'ethics,' 'moral principles,' 'psychology,' 'epistemology,' implied an understanding of what these terms meant, then and then only would teacher and parents have a right to expect a child's acts to be moral. But the parent, acting with an inevitable unreason, expects in the child an understanding of the things denoted by words which the child himself can only hear and pronounce."

The fact is stressed that the parents' problem is to impart their knowledge and experience in such a way as to encourage the child's intelligence and not to balk it with prohibitions; to discipline it and not to repress it; to train it, and not to choke it with their own fears. In a word, the child's mental development should neither be discouraged nor allowed to run wild. How best to train the child's mind morally and intellectually, thus producing the finest character, will be more clearly understood, if the parents are able to grasp the fundamental principles of mental behavior. And this the present volume should enable them to do with a considerable degree of success.

WILLIAM J. FIELDING.

Physical Bases of the Emotions

Bodily Changes in Pain, Hunger, Fear and Rage, by WALTER B. CANNON, M.D. Cloth, 311 pages, illustrated, $3.00. New York: D. Appleton & Co.

This volume is one of importance in its special field, and will prove quite indispensible to both the physiologist and psychologist. Dr. Cannon is Professor of Physiology at Harvard University, and the numerous experiments recorded here, covering a period of several years, took place under his direction at the Harvard Physiological Laboratory.

Fear, rage and pain, and the pangs of hunger—the major emotions—are all primitive experiences which human beings share with the lower animals. It is agreed that these experiences are among the most powerful that determine the action of men and beasts. Therefore, a knowledge of the conditions which are associated with these experiences is of profound importance in the interpretation of behavior.

Unlike some other books that have treated this subject, the present volume, while scientifically accurate and careful in detail, is not written in technically stilted language. Unusual terms are explained as the record of the experiments is outlined, so that the student, no less than the specialist or more mature profes-

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sional, is enabled to grasp the significance of the processes discussed.

While the average person has a vague notion of the effect of the emotions on digestion, for instance, the thorough manner in which emotional stimuli are traced in their relation to the law of cause and effect, is a revelation. Very elaborate and detailed experiments, with the most painstaking method of recording the findings, are here presented.

Many of the interesting experiments cited deal with the rôle of the adrenal glands, and their marvelous secretion, adrenin, which plays such an important part in preparing the individual for facing the vicissitudes of his environment.

One of the chief merits of Dr. Cannon's book is that it gives a concrete, material basis for the student of psychology, linking up in a definite way the interrelations of psychic and physiological activity, thus offering a valuable guide to a clearer understanding of behavioristic psychology.

WILLIAM J. FIELDING.

Behavior Psychoanalysed

Psychoanalysis and Behavior, by ANDRE TRIDON. $2.50. New York: Alfred A. Knopf.

Mr. Tridon is widely recognized as the most popular American exponent of psychoanalysis. In the present volume, he amply fulfils the expectations of the reader of his previous work. His clear and lucid interpretations of phenomena that have hitherto been clothed in mysterious phrases are in refreshing contrast to those who have espoused the orthodoxy of Freud in all its profundity, as well as in its romantic features.

Certainly, the author accepts the fundamental principles which Freud discovered, and avails himself of many of the valuable ideas and much of the technique formulated by this great pioneer. But Tridon has gone further by correlating these more purely Freudian conceptions with the equally valuable discoveries of Jung, Adler and Kempf, the American analyst, and incidentally adds some worth-while contributions of his own.

As the name suggests, this book is a treatise on the psychoanalytic interpretation of behavior and conduct. In this respect, it is not only interesting and illuminating as a cultural morsel for those who crave mental stimuli, but it has an infinitely broader usefulness as a manual of practical information. In fact, the author has performed a real service by setting forth in readable, non-technical language the modus operandi of the psychophysico organism.

Departing from the orthodox notions of psychologists, new

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and old, Tridon accepts the more advanced theory of Kempf and shows that the dividing line between the physical and the psychical activities is more or less of a delusion. Figuratively, he takes the "psyche" out of psychoanalysis, even though for the sake of expediency he permits this prefix to remain.

The point is emphasized that there are no processes that can be said to be purely psychical and none that are purely physical. All the psychical and physical activities and functions are so interdependent and interrelated that the whole system in all its ramifications can simply be called an organism, whose operations cannot be definitely divided into two distinct categories.

To try to separate the processes of the mind from those of the body has been shown by experiments of the biological laboratory to be a fallacy. The book stresses these points in a way that will prove edifying to the student of biological as well as psychical phenomena.

Of particular interest to the rationalist is Tridon's analysis of puritanism, which he terms a dignified neurosis. The puritan —taking the word in its modern sense—he states is "a sexually abnormal person." According to whether its abnormality is anesthesia or hyperesthesia, we have two types, both negative socially, one of which, however, is seldom objectionable.

In other words, the crusading puritan is an over-sexed neurotic, who labors under the constant torment of repressed sexual emotions; and consequently thinks that everyone else is similarly beset. So he proceeds, by the suppression of every suggestion of sexual manifestation, normal and rational, as well as the grosser evidences, to save mankind from itself. In reality, he is striving to protect himself from his own conscious and unconscious desires.

Neither authentic medical and scientific works, nor legitimate art productions, are spared when they come within the range of his snooping vision. The "innocence of childhood and the purity of womanhood"—his favorite stalking-horses—he pronounces, must be protected. But as he has regressed to a very early stage of emotional childhood himself, it requires little imagination to suggest who he is really intent upon saving. It is time we ceased to leave the guardianship and interpretation of morality in the hands of abnormal types.

I once heard a well-known lecturer on rational sex ethics remark that if Comstockery was carried to its logical conclusion, a professional Morality Officer should be stationed at the bedside of every married couple. At least this institution dictates what information married people may or may not obtain—publicly.

WILLIAM J. FIELDING.

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Topics in Tabloid

America's Newton

Michelson's discovery of a method of finding the size of stars whose distance is ascertainable, important as it is, is not as great a contribution to science as his measurements of the velocity of light. But establishing the size of Alpha Orionis as about 380 trillion times that of our earth has more than astronomical value. (An aviator flying at one hundred miles an hour would require three million years merely to pass this orb.) Such figures bring us to the verge of infinity; speculation as to the possible age and duration of such a star to the edge of eternity. These are useful mental exercises when the human microbes on our terrestrial fly-speck are still spending their living moment either destroying or preparing to destroy each other. It shows the shallowness and the pathetic futility of our mundo-centric philosophies, of our small-time conceptions, of our microcosmic horizons.

EDITORIAL, *The Nation.*

A Marcy Reminiscence

Hunter McGuire related the case of a man who was struck on the head with a missile in one of the southern battles. He was brought into Richmond unconscious. He made a slow recovery. He lost the ability to speak, and he lost the power of reasoning and thinking, and lived an animal life for thirteen years. Dr. McGuire operated on him, and on waking from the anesthetic the man exclaimed, "Where has the army moved today?"

HENRY O. MARCY, *Journal American Medical Association.*

Deafness and Lip-Reading

Lip-reading is the greatest boon to the deaf person. It is surprising to find, sometimes, that lip-reading has made it possible for patients to stimulate their auditory centres sufficiently to actually hear better. Whether this is done through association through other centres or not, it is hard to say. But the fact remains nevertheless.

HAROLD HAYS, *Archives of Diagnosis.*

The Joy Ride

The popularity of the automobile has made many sex crimes possible. Many an unprotected girl has been assaulted or persuaded to sacrifice her virginity by dissolute scions of homes wherein there is means sufficient to purchase automobiles for them. The lure of a "joy ride" has caused the "downfall" of hundreds of girls.

LEE ALEXANDER STONE, *Modern Medicine.*

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Urology and Sexology
Continuing the
AMERICAN JOURNAL OF UROLOGY AND SEXOLOGY

EROTICISM IN WOMEN

By the Rev. Arthur E. Whatham

In a previous article, "Sex Antagonism" (MEDICAL LIFE, March, 1921), I showed that the writers of the Old Testament and the Apocrypha viewed women as peculiarly erotic. This has been the view of men generally from remote times, and still continues to be their view, and many eminent women have held the same opinion. Notwithstanding, however, this very wide and age-long consensus of opinion, I am firmly convinced of its error, holding, in *The American Journal of Urology* (July, 1917, p. 302) that with woman "the act and sense of physical pleasure count less than they do with man," the pure eroticism in her case being a mere "secondary sexual impulse" as I have termed it, and not a primary sexual impulse as it is with man. This was the emphatically expressed conclusion of Prof. Fehling, who asserted, "The appearance of the sexual side in the love of a young girl is pathological" (Ellis-Psy. Sex, Vol. I, p. 158). The same writer quotes Windscheid as affirming that "In the normal woman, especially of the higher social classes, the sexual instinct is acquired, not inborn; when it is inborn, or awakes by itself, there is abnormality." In harmony with both of these scholars, Krafft-Ebing expressed the opinion that women require less sexual satisfaction than men, being less sensual.

Notwithstanding, however, the view of these experts as quoted, a view with which I am in emphatic harmony, this, as I have intimated, has not been the prevailing opinion, but, on the contrary, as Brierre de Boismont wrote, "Turn to history and on every page you will be able to recognize the predominance of erotic ideas in women." From this recognition, evidently, we find the laws of Manu attributing to women "concupiscence and anger, the love of bed and of adornment." So firmly convinced have men been that this opinion of women was correct, that Arabic authors have aptly voiced this view by asserting that "The longing of the woman for the male organ of reproduction is greater than that of the man for the corresponding female organ," to put it less grossly than the original saying. Notwithstanding this greater weight of opinion on the point we are discussing,

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I have ventured to oppose it, first in my original article mentioned (A. J. U., July, 1917—The Social Evil), and again in an article entitled "His Woman Shudder Sexual Desire Than Man" (A. J. U., July, 1918), where I referred to this first article as touching my emphatic opinion in question, "proving its incontrovertibility." But did I prove this point as unquestionably as I here asserted, and in the further article where I made this assertion was I able to show that I had actually done as I maintained? There are many reasons, important reasons, for our discussing this question again, one of these being, as asked in my previous article, Sex Antagonism, "Have men ever had any justifiable ground for this particular suspicion against women?", that is, that women have no inherent sexual virtue, and that given the opportunity they would readily indulge in "free-love."

The Greek writers, men of peculiar penetration of thought, certainly assumed what we have just stated, for Æschylus may be accepted as voicing the general opinion when he describes the ordinary father as believing that "his daughters will misbehave if left to themselves." It is even so with the writers of the Old Testament, for when the prohpet Hosea desires to bring home to Israel the degrading character of their sexually obscene idolatries, he pictures the nation as a woman who "decked herself with her nose-rings and her jewels, and went after her lovers" (2.13). This is no mere description which fits equally the men and the women of Israel, for there is abundant evidence that the Hebrew writers viwed their women as peculiarly given to lustful desires and excesses. Not only is this opinion shown generally in such a passage as Gen. III. 16, "thy desire shall be to thy husband, and he shall rule over thee," but particularly in Isa. III. 16-17, where a particularly disgraceful exposure of female nudity is prophesied as a curse of God upon Israel's women for their excessive immorality. Notwithstanding, however, the apparent weight of this evidence, especially when taken in conjunction with modern medical testimony to the same conclusion, we once more contend that such an opinion has been formed from facts the origin of which has been quite naturally, although erroneously estimated.

Appearances as supplied by women from earliest time down to the present day have fully warranted men in drawing the conclusion that women are naturally more lustful than men. But it has been only "appearances" which have given this warrant, my contention being that such appearances were not due to eroticism, but to impulses altogether apart from reproductive feelings, except perhaps in a few instances, when, even here, the erotic impulse had been the unconscious and not the conscious cause of

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the particular appearance. This is the reason why I have termed a woman's desire for male reproductive intercourse as with her "a secondary sexual impulse," but with man as "a primary sexual impulse."

Now how in the case of women is a man able to hold the above opinion as a fact? Certainly not from knowledge gained directly from very many good women touching this fact, as it is a point upon which most good women would insist upon being reticent. It is therefore by observation solely that this question can be settled, and observation on this point exercised over a wide area and from very early time has shown that with most women the erethism of sexual intercourse takes much longer to achieve than with men, while many women never achieve it at all. The consequence of this female sexual characteristic is that, as said in our first article, "the action of the male has usually to be prolonged much beyond its natural limit for the female to feel any special degree of physical excitement," including, of course, physical satisfaction "equalling that experienced by the male."

This prolongation of the act by the male in order to allow the woman to complete the intercourse exactly as the man completes it has been and is still advised by many sexual psychologists, not only for the satisfaction of the female, but also for her health. We here, however, strongly oppose any such advice for natural, hygienic and spiritual reasons. If wide and varied observation proves that naturally most women are much slower in reaching the same satisfaction as men naturally reach in the sexual act, so that many women seldom have here the equal satisfaction, it would seem best to let matters take their course, nature in her evolutionary development knowing perfectly well that here she is acting for the best. Were this sexual erethism on the part of the woman essential to produce what nature intended by the act, the birth of a child, then the advice in question might be regarded as wise, but it is not in the least essential on the part of the woman while absolutely essential on the part of the man.

As non-essential on the part of the woman nature in the course of its evolution is in her case seeking to dispense with it for some particular reason. By such dispensation woman becomes, as I have said in my third article, "less erotically amative than man," a fact which, as I have said in my first article, "at once puts her on a plane to which in our present stage of existence man can never reach." It enables her to become peculiarly the spiritual guardian of the race in its development from the things of earth to the things of heaven. This, however, is a point which comes in another section, so that we shall say no more here

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under this head, but continue the discussion of woman's natural sexual anesthesia, and so we repeat what we originally asserted, that a sexual orgasm is not in the least necessary for a woman's impregnation, health, nor, as a rule, for her complete happiness and comfort in sexual intercourse.

Indeed, when Acton says, that "the majority of women (happily for society) are not very much troubled with sexual feeling of any kind," meaning here amative feeling, he is undoubtedly correct. Neither he, however, nor we ourselves mean it to be thought that we view the normal woman as destitute of amative feeling, and, consequently, never experiencing a sexual orgasm. What we presume Dr. Acton means, and what we actually mean is that with the normal woman love is more of a psychical than a physical impulse, whereas with man it is exactly the reverse. This is why a woman always knows whether she loves a man before she marries him, whereas a man seldom knows that he really loves a woman until after he marries her. The reason of this is that when a woman gives herself in marriage to a man it is because he has first reached her senses through her heart or soul, whereas normally she has had to reach his senses through his sexual impulses set working by the sight of and close proximity to her physical charms.

The next point to consider is the question as to whether the health of a woman will suffer unless she usually experiences an orgasm in sexual intercourse. Now the fact is that the majority of women, most of whom are happily married, seldom do experience an orgasm in intercourse with their husbands. It certainly pleases them when they do, but it seldom or, we may say, never particularly distresses them if they do not, certainly the absence here seldom if ever produces ill health.

Finally we come to the question of the wife's spiritual possibilities due to the fact that she is much less influenced, and never, indeed, controlled by amative feeling in her love for her husband. Here it is that in the scheme of human civilization God has been graciously pleased to put her on a plane where she can be less animal than is possible in the case of man. This is by no means saying that a woman is naturally less animal than man, but that she possesses the possibility for her becoming so. Naturally unencumbered with the need, as in the case of man, of isfying a purely animal appetite, she can lift her sexual needs so far above the mere animal or physical plane that they become psychical and no longer physical needs.

Marriage, in keeping with human development, should be

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for a further elevation "into an ethical region in touch with eternal verities" (Northcote—Chrisitanity and Sex Problems, p. 375). As nature has developed woman with regard to her purely amative sexual impulse, she is nature's indispensable assistant in the carrying out of so great an ideal. For non-natural methods to be adopted whereby woman's natural sexual anesthesia may be overcome in marital intercourse is to make such intercourse nothing but pure animalism, it would be to forcibly prevent woman from taking that heavenly place in the progress of human civilization which Nature, God's visible Presence, intended she should occupy.

If in the foregoing analysis we have rightly estimated the normal woman's sexual character, how does it come that the majority of men from the earliest time to the present day have so mistakenly judged her? The answer is—from appearances, and in no sense from any actual fact. In appearances woman is exactly what men have assumed her to be. Every woman wants a man, wants him badly, and has always wanted him, very much more than the ordinary man has ever wanted a woman. We do not mean by this to say that the ordinary man is indifferent to women, on the contrary, every man wants a woman, but as compared with the manner in which the ordinary woman wants a man a man's want is as nothing, since it is merely an occasional want, whereas a woman wants a man, that is, one man, as her own special property and no one else's.

Says May Isabel Fisk, in "The Over Seas Daily Mail," November 27th, 1920, "What every woman wants more than anything else in the world is absolute dominion over one man." This is no mere "Penny-aline" writing, but an expression of a great anthropological and sociological truth. Woman naturally is a born "Boss," she loves power, she loves to rule, traits which are shown in her childhood, for here she is infinitely more precocious than a boy almost twice her age. Strength, then, is what a woman most admires, strength of muscle and strength of brain, and as men usually have these in greater degree than women, every woman from time immemorial has set her wits to work to capture and hold one man as her own, over whom she could exercise her sway, and so become possessed of his strength of muscle and brain as though they were hers.

The points intimated above range themselves under such headings as "What is Feminine Love," and "Woman the Boss," two subjects it is our intention to discuss at length in forthcoming papers. Here the reader must rest satisfied with a brief reference to these points as being the real cause for the normal woman

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so ardently seeking the company and possession of some one particular man. This ardency on the part of women has by the various writers quoted been wrongly construed as the result of woman's more erotic nature than the ordinary man possesses. That is to say, these writers have assumed that it was this more erotic nature which was the cause of the normal woman's ardency in her desire for and possession of some man. They were of course correct in recognizing this ardency, but they were decidedly incorrect in the cause to which they attributed it.

In this tremendous error men have done, and continue to do woman a grave injustice. As I have said in my former article, Sex Antagonism, "the natural character of women is more loving, and, in many ways, higher than the natural character of man," by which we mean the developed character as possessed by most women, and not the original instinctive quality with which woman seems to have been endowed. Without this explanation it might seem that we have contradicted ourselves in first referring to woman's natural character as more loving and in many ways higher than that of man, and then saying, as stated above, that every woman naturally wants to be a "Boss" to some man.

There is here, however, no contradiction whatever. Tendencies and developments may be two different things, and the present instance affords a case in point, since while woman seems to have come into existence with the natural tendency to "Boss," it is only in the exceptional woman that we find this tendency developed into a ruthless tyranny, for in the normal woman it has become a winning and alluring ownership so intensely sweet that its captive is made more happy by its exercise.

As we have said, the subject of woman as preeminently a boss, we shall consider in another article. Here we may say, however, that this particular characteristic of woman is not the result of a purely dominant nature, constituted solely in the love to rule, but of the maternity instinct constituted solely in the desire to conserve and safeguard the best interest of another apart entirely from what might be best for one's self.

We are conscious that in our effort so far made to rightly determine the true cause of the ardency with which the normal woman seeks a man as an actual possession, we have, in denying that this ardency is the direct result of her greater amativeness, produced but one strong piece of evidence, viz., that most women are much longer in achieving an orgasm than is natural with the normal man. To this we may now add, that with many women, and so probably in the case of most, "a single coitus is often but a pleasant stimulus, the climax of satisfaction not being reached until a second or subsequent act of intercourse."

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With the normal man a single coitus produces lassitude and readiness for sleep, which of itself is sufficient to show that he should not usually attempt more than one intercourse. Again, with men the sexual impulse is confined to a single point, the ejaculation of semen. With the normal woman the immediate sexual impulse is more diffused, including the psychic as well the physical side of her nature. Thus it is that, as it is well known, "a woman can find sexual satisfaction in a great number of ways that do not include the sexual act proper."

In fact, this whole question may be said to turn on the point which I emphasized in my first article, that "A woman has no such secretion which demands expulsion as a man possesses." This, undoubtedly, is the reason why until after marriage women rarely have sexual dreams, and only then very occasionally. This fact helps us to understand another well known fact, that most women in sexual intercourse have to be specially stimulated before they can experience a full satisfaction of the same character as that experienced by the husband.

To accomplish, therefore, the same end in both cases, a husband would be required to prolong his sexual excitement considerably beyond the natural period in his case. Sir Richard Burton in his "Arabian Nights," shows that this is a point much studied by Moslems and Hindoos, and Havelock Ellis appears to think that the same study should be undertaken by Western husbands. But surely this would be to bring down the Christian's marriage-bed to the level of a harlot's couch, surely this would be the making of marriage much more a union of bodies than of souls and minds, with the result that the woman would lose that position in which we have contended it has pleased God to place her that she may be the chief uplift in the spiritual development of humanity.

If this advice on the part of Havelock Ellis and other sexual psychologists should have this effect, as I believe it would, then it cannot be too strongly depreciated. It is possible that these sexual psychologists might attempt to oppose this conclusion by pointing to the fact that masturbation seems to be practised more by women than by men, a correction for this vice being found in marriage and the studied attempt by men in this relationship to afford women the particular relief they seek in masturbation.

We very much doubt, however, that any such relief is needed by women for their perfect health any more than it is in the case of men, and here we know that it is not needed. The greater prevalence of masturbation amongst women is en-

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tirely due, we believe, to the fact that women can stand very much more sexual erethism than men without the slightest injury or even discomfort, the chief reason being, of course, that in the sexual spasm there is no discharge of semen, but only of nerve force.

We conclude, therefore, that admitting that women masturbate more than men, this fact in no sense shows any necessame completion in the sexual act as a man experiences. The only point now left to settle, consequently, is as to whether this completion is essential in the case of the woman in order to ensure her full satisfaction in a sexual intercourse. The answer here depends entirely upon the point of view from which the woman participates in the act. With the man, of course, there is no room for the consideration of any such dependence, for in his case the act when normally undertaken necessarily has but one end—the expenditure of semen. With the woman, however, her sexual impulse, as we have seen, not being limited, as in the case of the man, to one point, and as she takes much longer than the man to be amatively aroused, her complete satisfaction in sexual intercourse will depend entirely upon the point of view from which she permitted herself to take part in it.

Here we do not hesitate to affirm that with most women this point of view has nothing whatever of self in it. Woman's chief aim is to afford satisfaction, and in the securing of this her own satisfaction finds fulfillment. This is our estimate of the ordinary woman's position in marital relationship, an estimate which, unless we are very much mistaken, the ordinary married woman will emphaticaliy endorse. It is owing to this sity on their part, so far as their health is concerned, for the estimate that we felt ourselves able to say that the natural character of most women was more loving and in many ways higher than that of a man.

I have endeavored throughout the course of this article to defend this statement against the assertion by the majority of men from the earliest time to the present day that women are peculiarly erotic, much more so in fact than men. I have endeavored to remove this terrible libel from the woman which even the Bible puts upon her, viewing her as the one who through sheer eroticism first brought sin into the world (Gen. III. 3.6, 13, 16;2 Cor. II. 3;I Tim 2.14).

We cannot close this effort, however, without warning woman that in the immodest manner in which she has ever been willing to exert her maternity instinct in the securing of

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a man she has unfortunately given men the very natural impression that the ordinary woman is usually much more erotic than the ordinary man. The blame, consequently, for the entertaining of this very false idea, cannot in the first place be laid to the charge of men, but upon women themselves.

In woman's God-given instinct to become a mother, in the securing of which she needs a man, she has allowed herself to so conspicuously manifest to men the actual truth of her desire, that they, having no such like instinct to become a father, but only the desire to gratify a sexual appetite, have construed the desire of a woman to signify what they knew their own desire meant—pure eroticism.

When women have been quite as willing to offer their bodies as their hearts to the men they loved, men cannot very well be blamed in the first instance for believing that here woman's ardency was a sign of her intense eroticism. They were, of course, as we have endeavored to show, absolutely in error here, but the mistake was natural under the circumstances.

To-day, however in the light of our new knowledge, especially the new knowledge of sexual psychology, the thinking man has no longer any excuse for continuing to view the ordinary woman as more erotic than the ordinary man. Unfortunately the ordinary modern woman, even the ordinary modern good woman, is just as immodest in her dress and action as were the women of Israel upon whom their prohpets poured out their wrath for the shamelessness of the daughters of Zion. This should not be, and to this end we have addressed ourselves in the various papers we have already written in our effort to free women from the terrible libel which has been universally laid upon them.

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After Office Hours

By Gorham B. Munson

H. L. Mencken: Poet and Playwright

It was Don Marquis, I believe, who once referred to H. L. Mencken as being three of America's four best literary critics. This much is true, that—whether you subscribe to this estimate or whether you hold with Stuart P. Sherman, Urbana, Illinois that Mencken is a raucous and thoroughly reprehensible being—he has attained a far-reaching and booming resonance as a critic of books. So it is a slight shock, I suppose, to find him labelled poet and playwright.

Yet in 1903 Marshall, Beek and Gordon, Baltimore issued a very thin little book entitled *Ventures into Verse* by Henry Louis Mencken. The sub-title ran thus: Being Various Ballads, Ballades, Rondeaux, Triolets, Songs, Quatrains, Odes and Rondels—All rescued from the Potters' Field of Old Files and here given Decent Burial (Peace to their Ashes). And lower down on the page was printed the warning—First (and last) Edition. The present-day prominence of Mencken must excuse, I fear, whatever ungraciousness there may be in disturbing the ashes therein given decent burial.

The date of publication is interesting, for it shows that Mencken was twenty-three years old at the time. And this is interesting because of his later dictum that all poets should perish at the age of twenty-six. He himself has more than lived up to the import of this saying, for he has not offended publicly in this way since 1903.

Should there be any regret over this silence of H. L. Mencken, poet? Well, *Ventures into Verse* will hardly inspire it. These reprints from contributions to the *Bookman, Life, New England Magazine, National Magazine* and the *Baltimore Morning Herald* are in the main characteristic newspaper and magazine verse of the lighter sort. Frivolous, sometimes obvious, sometimes clever, almost always mechanical, and scarcely ever expressive of any deep emotion—it is no wonder that they have been forgotten. There is missing in them the originality and the strong slash of the Mencken we now know.

It is a trifle amusing to discover a strong Kipling influence on the youthful Mencken. The first poem is *To R. K.* But later

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there appears *A Ballade of Protest (To the address of Master Rudyard Kipling, Poetaster)* which concludes in this wise:

> Master, regard the plaint we bring,
> And hearken to the prayer we pray,
> Lay down your law and sermoning—
> Sing us again of Mandalay!

And then there is *Finis,* perhaps the best of the whole mediocre collection. It tells of a rich man, and of a man who fought for the right, and of a man who dreamed a dream and then made his pen serve his dream. But in each case the refrain is brought in:

> And the end of it all was a hole in the ground
> And a scratch on a crumbling stone.

But Mencken as a playwright is another matter. Owen Hatteras—(What a shifting identity this pseudonym is reported to cover! Who are the Owen Hatterases now rivals the Frank Harris Shakespearean contentions, the argument over Wilde's demise or non-demise, and the disappearance of Ambrose Beirce as a topic at the tea-tables of those who like to discuss such matters.)—Owen Hatteras three years back recorded that Mencken "and Nathan plan some day to collaborate on a satirical farce with scenes laid in a Turkish harem." The day has come. That play has very recently been printed under the title of *Heliogabulus.* The reviewers' chorus on it swelled into a hearty "Some Play!" verdict. But eight years before *Heliogabulus,* Mencken did an exceedingly creditable one act play all by himself.

This was *The Artist,* a play without words. The scene is a music hall and the action is that of a piano concert. The lines are the unspoken thoughts of the audience, janitor and pianist. The whole thing is typically Mencken: it is satirical, it is waggish, it is clever, it is true. The Vagabond Theatre in Baltimore once played it, while Owen Hatteras claims that this *opus* has been translated into German, Dano-Norwegian, Italian and Russian. It at least deserves such translation far more than any of the light verse turned out by the same author.

Has Capitalism a Champion?

Isn't there some really clever man, some brilliant pen, some first order intellect who will defend capitalism? Social revolution has its Bernard Shaw, H. G. Wells, Maxim Gorki, Leo Tolstoi and Romain Rolland, but capitalism apparently has no literary champions who are not dull, repetitious or, at best, belligerently brutal. Even Gilbert K. Chesterton who has so engagingly fought

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in behalf of many orthodox stupidities balks at flinging his clouds of paradoxes to extenuate the present scourge of society. The day he arrived in the United States, the citadel of capitalism, he declared to a reporter that "the most recent cause of all our troubles is capitalism, that social experiment which is almost as new as the typewriter and which is already outworn. So many persons seem to think that the only alternative of capitalism is Socialism, ownership by the state, quite forgetting the way the world was arranged up to the last hundred years or so.

"In the past the normal thing was for each man to live in his own house, with his own wife and children, and to raise his own food on the land around him. Sometimes he was a slave, sometimes a serf. That merely meant that another man said to him and his brothers, 'You must give me some of the products of your labor.' But at least he, the ordinary man, was left with a place to sit down.

"With the advent of capitalism this man and his brothers were turned out on the highways of the world. He could not be sure of work. What an outrage it is that a man should have to wander along the road and think to himself, 'My God, I wonder if I can find a job!' At best the capitalist said to him: 'You must give me all your services; you cannot raise your own food or live under your own roof, and in return I will give you some wages—not too much!'

"That is the arrangement—masquerading under such names as 'progress' and 'efficiency.' That is the condition into which society has got itself; that is the reason for our unrest—the fact that the common man no longer owns and enjoys the common things he wants from life—his home, his wife in it, his little patch of ground.

"Society CAN go back, and on several historic occasions when it has not gone back it has gone ahead—to degeneration and extinction. Capitalism is inhuman, intolerable and inefficient. To change from it we need that rare, that mysterious, that almost unknown thing today—statesmanship. We need a statesman who is not of the tribe of politicians—a benevolent despot or demagogue who knows the wants of the people."

One does not dwell on Mr. Chesterton's inaccurate definition of Socialism: we forgive that as a minor flaw in a strong offhand indictment of a disastrous experiment.

The day of this interview there was also published the news that Anatole France, world famous for his irony, erudition and humanism, the foremost living man of letters in France, had de-

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clared himself a Communist and had endorsed the Third Internationale.

Now then, isn't there, indeed, something very basically wrong with a social order which makes enemies of all its leading men of sense and feeling and secures the support only of mediocre and boresome intellects?

The Plowshare

The little *Plowshare* of Woodstock, N. Y. has announced its demise. It started as the *Wild Hawk* nine years ago and turned out to be a Methusaleh compared to the longevity of most of our small magazines of the arts. The editor, Harvey White, is a novelist who had sense enough to retreat to a log cabin in the Catskills, purchase a tiny printing-press, and fall to publishing an independent medium. About him (a picturesque figure with black beard, curly hair and Russian blouse; he looks like a Russian intellectual) there grew up a very interesting artists' colony. I am not well acquainted with the early volumes of the *Plowshare* nor am I sufficiently in accord with White's ideas to write a full or entirely sympathetic appraisal of the dead magazine. In my opinion, he printed too much that was mediocre enough to appear in *Scribners*. But he also published the excellent poems and book criticisms of Harold Ward, stimulating discussions on art from William Murrell, Carl Lindin's translations from the Swedish, and many good drawings, wood-cuts and linoleum-cuts by such artists as William Schumacher, Jean Paul Slusser and Fernand Leger. God knows that America in the past decade, flooded with huge selling stereotyped magazines aiming to please everybody just a little and the droves of pushing business grubbers a great deal, needed hosts of little honest journals to bring to light now and then something disturbing or beautiful. Hervey White deserves a preposterous amount of thanks for running such a magazine at a financial loss for nine years.

Two Americans Among the French Poets

It surprises even Americans who read rather widely to learn that two of the leading French poets of modern times are American. The names of such *emigres* as Henry James, Whistler, and Ezra Pound excite a considerable resonance with us, but the names of Francis Vielé-Griffin and Stuart Merrill evoke nothing save in an infinitesimal fraction of our reading public. Yet the most sensitive spirits in modern France have accorded them high recognition.

Francis Vielé-Griffin was born in Norfolk, Virginia, in 1864. In his early boyhood he was taken to France and received a thor-

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ough French education. By the time he was twenty-one he had printed verse in his adopted tongue and since then has published thirteen books of poetry. He entered the world of letters just as the Symbolist movement, stemming from Poe, Baudelaire, and Verlaine and fathered most carefully by Mallarmé, was being initiated. Vielé-Griffin early attached himself to the Symbolists, edited one of their first reviews, and extensively propagandized for them. "He was one of the strongest theoretical spirits in the Symbolist movement," writes Professor Ludwig Lewisohn. His gift is decidedly lyrical, rare and often haunting: he sings with what seems to many an English cadence introduced into French verse. A proof that he is well esteemed in French letters is the fact that Henri de Régnier, perhaps the most representative French poet today, wrote a monograph in 1894 entitled *Francis Vielé-Griffin*.

Stuart Merrill, who died recently, was born at Hempstead, Long Island, in 1863, and like Vielé-Griffin was taken as a child to France for his education. Merrill has, however, been in closer contact with the United States. He came back in 1885 and studied law at Columbia University. In 1890 he published through Harper and Brothers a book of translations of prose poems by contemporary French writers, called *Pastels in Prose*. Even after he returned to France he contributed articles on the literature of his adopted land to the New York *Times* and the *Evening Post*. Abroad he was known as a revolutionary Socialist (to Socialism he contributed generously from his fortune), and as a poet who was preoccupied with beauty alone. His poetical works number four volumes. A dictum of his is instrumental in throwing light on him both as a man and as an artist. He has said, "Modern society is a badly written poem which one must be active in correcting. A poet, in the etymological sense, remains a poet everywhere and it is his duty to bring back some loveliness upon the earth." He was one of the friends of Oscar Wilde who did not turn away when Wilde was persecuted.

Such in very brief are the two sons America has given to modern French poetry. May the time come when their work is far more widely translated into the tongue of their native land than it is at present!

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VOL. 28, No. 5 MAY, 1921

1921
Medical Life

MEDICAL LIFE

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An Editorial and an Appeal !

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(*Established 1851*)

VICTOR ROBINSON, Ph. C., M. D., Editor

VOLUME 28 NUMBER 5 | MAY 1921 | NUMBER EIGHT OF NEW SERIES

A SAVANT IN DISTRESS

Somewhat over ten years ago, Sir William Osler, who was an inspiration to all students of medical history, wrote:

Only a few important works dealing with the subject in a systematic manner have been published within this period (the past twenty years). *Gurlt's Geschichte der Chirurgie* is a monumental contribution. The *Handbuch der Geschichte der Medizin*, designed by Puschmann and edited by Neuburger and Pagel, is invaluable as a work of reference. A history of medicine suitable for the student and general reader is a difficult book to write. Few men have the necessary qualifications for the task. The special scholar with knowledge of great fullness and accuracy in one period may be the very last man to undertake a work in which proportion is the essential element. When Fasciculus I. of Neuburger's *Geschichte der Medizin* came to hand I felt that here was a book which would be particularly useful to the English and American student—clearly written, not too exhaustive, and well and systematically arranged.

Thus, under the auspices of Osler, with the acclaim of cultured physicians in England and America, the Oxford University Press published Ernest Playfair's translation of the first volume of Max Neuburger's *History of Medicine*.

A few years later appeared Fielding H. Garrison's *History of Medicine*, containing this reference to the Professor of Medical History at the University of Vienna:

A best modern work is unquestionably the recent "History of Medicine," by Pagel's collaborator, Professor Max Neuburger, of Vienna, which is still coming out in parts and also in process of translation by Ernest Playfair under the direction of Sir William Osler (London, 1910). Prior to this publication, Neuburger had established a well-deserved reputation for accuracy and scholarship through his valuable historical monographs on the physiology of the nervous system before the time of Flourens (1897), the mechanism of specific nutrition (1900), and the prehistory of antitoxic therapy (1901). As a writer Neuburger is eloquent, profound, absolutely sincere, and a good stylist. As

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a scholar, he is richer, deeper and more serious than Baas, and his accounts of folk medicine and of Greek and Arabian medicine are by far the better of the two. Yet he has no saving salt of humor and often exhibits the Germanic tendency to rhapsodize and to wander off into philosophic reverie. The intention of his great work is, in fact, to present a philosophic synthesis of medical history. He throws many new facts into the field, but does not always present them in a simple, direct manner. The second volume of Neuburger's treatis covering medieval medicine, is a masterly synthesis, opening out many new viewpoints. The author's firm grasp of the complex details is everywhere manifest, but the reader is apt to lose himself at the first reading. The large first volume of the English translation is printed on light-weight cloth paper, a great comfort in large-sized books. The substratum of erudition (footnotes and marginalia) has been largely omitted from the English version.

Volume One is forlorn on a shelf, and calls for its mate. We expected the publication of Volume Two, but while we waited, the cords of fraternity snapped between the universities of Oxford and Vienna. The most ancient of plagues attacked the human race; the cancer of conflict spread rapidly over the bosom of Mother Earth, killing her children by the million. Mankind sees the stars, but goes to the shambles.

Technically, the World War is now over; emotionally, it will not be over for centuries. What is the chief result of Europe's unending miles of new cemeteries, fertilized by the blood of an agonized generation? Countless young men sleep in untimely graves, and their final sacrifice has served only to foster militarism, and to shatter all faith in the progress of humanity.

It is a grim fact that most of the warriors and diplomats who led the war, although men advanced in years, are yet alive. They are individuals of blunted sensibilities, and the sound of a world in tears is music to their sadistic souls. Babes not yet in their mother's wombs will one day march against each with international hatred, will search each other in the sea and encircle each other in the air, will rush madly at each other's bellies with the glittering bayonet, because the masters at Versailles—a name long hateful in history—deliberately planted the seeds of Future Wars.

We said that the first World War was now over, and that the old generals and politicians were still alive; alas, the same cannot be said of Europe's scholars and scientists. Almost every mail brings the news that a renowned intellectual worker has succumbed to starvation or despair.

Professor Neuburger has survived the unnumbered horrors of Militarism's sanguinary cataclysm, but the aftermath of the war has left him adrift. This scholar is in the unfortunate position of being unable to continue his work; his meagre income hardly suffices for the simplest necessities of existence, and he cannot subscribe to periodicals or purchase a coveted book.

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Readers of MEDICAL LIFE, a noble savant is in distress! One of the

foremost students of medical history cannot return to his manuscripts —unless we aid him. It would be splendid if we could send this man back to his desk—a desk on which several great books could yet be written.

We hereby solicit a fund, to assist Professor Neuburger in his life-work. All contributions received will be forwarded at once, and will be acknowledged personally and in the columns of this magazine. MEDICAL LIFE is the only monthly periodical in the English language specializing in the history of medicine, and Professor Neuburger has honored us by agreeing to write for our pages a series of essays on *Ancient Ideas in Modern Medicine*—his first contribution to an American periodical.

It would be especially appropriate, therefore, if MEDICAL LIFE could send something substantial to this savant in distress, to cheer him in his mental convalescence. Then when important monographs appear, signed by Max Neuburger, ours will be the happiness of knowing that we worked with him, in silent collaboration, across the sea.

It matters not that Professor Neuburger dwells in Austria, and our home is in America. We are all children of Mother Earth, and the word "foreigner" has no place in the vocabulary of humanity. Give! Give for a most worthy purpose! Who among our readers will be the first to give?

In July

The Doctrine of the Constitution

from Hippocrates to Virchow

By MAX NEUBURGER, M.D.

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Medical Legislation

In these days of feverish activity—the shrieking automobile is the fit symbol of our age—even the seasons seem to move with unaccustomed alacrity, and we will soon be in the midst of the summer. If there is one of our readers who wishes to make his vacation instructive as well as amusing, we suggest he study these twenty-five essays on medical legislation:

D. G. Brinton: The Registration of Physicians, 1878.
G. F. Shrady: Legal Regulations for the Practice of Medicine, 1878.
A. Crosby: Regulation of Medical Practice, 1882-3.
T. C. Milne: State Examinations and Legal Qualifications, 1882.
G. Rowland: Medical Legislation, 1883.
J. M. Taylor: Regulation of Practice of Medicine, 1883.
W. H. Rouse: Medical Legislation, 1883-4.
J. E. Reeves: State Board of Examiners, 1884.
A. Mercer: Medical Legislation and its bearing upon State Examinations for the Medical Degree, 1884.
W. Drayton: Historical Review of the Regulation of the Practice of Medicine, 1884.
A. M. Wilder: Medical Reform and the Suppression of Quackery, 1884.
H. O. Marcy: Medical Legislation, 1885.
W. C. Dabney: State Regulation of the Practice of Medicine, 1885-6.
D. J. Roberts: The Control of Medicine by Law, 1889.
W. Osler: License to Practice, 1889.
J. L. Minor: State Regulation of the Practice of Medicine, 1890-1.
J. P. Widney: Why Medical Legislation Generally Fails, 1891.
Y. H. Bond: Plea for More Rational System of Medical Legislation, 1891.
R. J. Dunglison Report on Laws Regulating Medical Practice, 1891.
R. H. Fitz: The Legislative Control of Medical Practice, 1893-5.
J. T. Greeley: National Medical Legislation, 1897.
R. C. Robe: A Plea for National Medical Legislation, 1898-9.
N. R. Coleman: Uniformity in Medical Practice Acts, 1903.
W. E. Foley: Medical Legislation, 1904.
R. J. E. Scott: State Medical Practice Laws, 1904.

By the time he is through with them, he will probably have become so much interested in the subject of medical legislation, that he may be tempted to wade through the vast bibliography, and digest and expound the entire subject, tracing its development from its origin to the present. Such a work would be of importance, both to the practitioner and the public.

One of the most effective programs of medical legislation that has come to our notice, is the one proposed by Dr. William J. Cruikshank, of Brooklyn, at the meeting of the House of Delegates of the Medical Society of the State of New York, at Saratoga Springs, May 15, 1916. Dr. Cruikshank said, in part:

All medical legislative matters shall be referred to the State Society. That society shall organize a state legislative committee which shall consist of the chairmen of the legislative committees of the different county societies, with a chairman selected by the house of delegates. This chairman shall, if possible, reside in Albany. The

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chairman of the legislative committee of each county society shall so organize his committee that it shall always consist of as many physicians as there are senatorial and assembly districts in his county, a physician being appointed from each district. Each member of the local committee will naturally be in constant touch with his chairman who, by reason of his office, becomes a member of the state legislative committee and therefore in touch with other members of the state committee, and also with the state chairman at Albany. In this way may be brought almost immediately into existence and concerted operation a strong organization of selected physicians especially and actively interested in legislative questions, which will ramify through and through every nook and corner of the state.

During the last session of the state legislature but one, namely, in the year 1915, I had the honor to act as chairman of the legislative committee of my county society. In that year about 150 measures amending the Health Laws were introduced. Not one of these measures, in so far as our committee could see, originated in a desire to serve the community nor was in any way calculated to do so. On the contrary the final enactment of many of them, by licensing ignorant, deluded or dishonest persons to professionally care for the sick, would have reduced to the lowest level the standard of medical education, menaced the public health, and jeopardized human life.

I believe that the mere knowledge of the permanent existence within our borders of such an organization as I have suggested, would have prevented these attempts. If this is too sanguine a view; if, in spite of this knowledge, these attempts had been made, it cannot be questioned that one or two vigorous campaigns waged by such an organization, would have destroyed them utterly and would have prevented their repetition. Medical legislation, being a state matter, it is obvious that the interests of the profession and the general public cannot be best served by a single county society, or even by the societies of all the counties if they act independently. So vital a mattr should be the concern of the united medical profession of the state.

Dr. Cruikshank's plan was unanimously adopted—and for the past five years has been entirely neglected. Dr. Cruikshank's attention is now absorbed by the problems of cardiology, and he is probably more interested in his correspondence with Sir James Mackenzie than in legislative committees, but the problems of medical legislation demand solution, and we would be glad to hear what our readers think of the Cruikshank plan.

Staff of Collaborators

With the publication of the present issue, which is number eight of the New Series, MEDICAL LIFE enters upon a new phase of growth. Last October we came to you with thirty-two pages; in November we appeared with forty-eight; from December to April we increased to sixty-four; and now we have expanded to eighty. Although our growth has been rapid, it has been a natural development, due to more subscribers, more advertisers, and more contributors.

Not long ago our manuscript-drawer had plenty of space, and had it not been for our "Life of Jacob Henle," we would have been hard pressed for material. But now we have gathered around us a

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corps of able collaborators, and as their contributions increase, the editor will be enabled to devote more time to Contemplation. It is a pleasure to introduce these associates to you:

Dr. William J. Cruikshank has written forcibly on medical legislation and other medical problems, including the most masterly protest we have ever read against the substitution of drugs in the dispensing of the physician's prescription (Medical News, Nov. 25-Dec. 2, 1905). He is now specializing in cardiac diseases, and is President of the Brooklyn Cardiological Society. Dr. Cruikshank is preparing for our pages a series of articles on *Modern Cardiology*.

Dr. Charles Greene Cumston, at one time editor of "The American Journal of Urology," at present Privat-dozent in the University of Geneva, is writing for us ten articles on *The Modern Treatment of Common Diseases.*

Dr. Bayard Holmes, formerly editor of the "North American Practitioner," and for several years Professor of Surgery in the University of Illinois, is writing for us the autobiographic serial, *Medical Education in Chicago, in* 1882 *and After.*

Dr. John L. Kantor, Chief in Gastrointestinal Diseases, Vanderbilt Clinic, Columbia University, and the originator of the intra-intestinal tube treatment of hookworm disease, is contributing a treatise on *The Modern Treatment of Gastrointestinal Diseases.*

Dr. Max Neuberger, Professor of Medical History in the University of Vienna, whose "History of Medicine" was published in English by the University of Oxford, is writing for exclusive publication in MEDICAL LIFE several essays on *Ancient Ideas in Modern Medicine.*

Dr. A. L. Wolbarst, Consulting Urologist, Manhattan and Central Islip State Hospitals, author of "Gonorrhea in the Male," translator and editor of Luys' "Cystoscopy and Urethroscopy," is giving us an instructive survey of *The Modern Treatment of Venereal Diseases.*

Dr. Jonathan Wright, author of "The History of Laryngology and Rhinology," will favor us with medico-historical contributions.

With such a staff of collaborators, our readers may confidently look forward to considerable splendid material.

In June

COMPLICATIONS OF GONORRHEA

By A. L. WOLBARST, M.D.

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Modern Therapeutics
Continuing the
MISSISSIPPI VALLEY MEDICAL JOURNAL
DETROIT MEDICAL JOURNAL
NASHVILLE JOURNAL OF MEDICINE AND SURGERY

Modern Treatment of Gastrointestinal Diseases

By JOHN L. KANTOR, M.D.
Chief in Gastrointestinal Diseases, Vanderbilt Clinic, Columbia University

I. General Principles and Methods

Prophylaxis.—Obviously, the prophylaxis of digestive diseases begins in childhood. Every effort should be made by parents, pediatrists, and the family physician, to build up sound digestive habits. All sorts of perversions gain a firm foothold in the early years. Thus, disorders of appetite are particularly common because of the habit of eating irregularly between meals and indulging almost continuously in sweets. Constipation appears and becomes chronic because the habit of regular evacuations is either never taught or never mastered. Malnutrition, which one would think intolerable in childhood in civilized and prosperous communities, is strikingly prevalent. Anyone whose business it is to converse daily with dyspeptics cannot but be struck by the large number of people who can trace their trouble directly to the days of their childhood. And yet, if such rules of digestive hygiene as the following were universally practiced "from the beginning" much future trouble would undoubtedly be avoided:

1. Meals should be taken on time.
2. Three meals a day are sufficient for normal people.
3. Food should be properly chewed.
4. The normal dietary should include all the chief classes of foods: Milk, butter, eggs; cereals; meat and fish; green and starchy vegetables; fruit.
5. Sweets should be used only as desserts.
6. A definite amount of water should be drunk daily (up to two quarts for an adult).
7. The bowels should be moved regularly without cathartics.
8. The mouth and teeth should be kept in good order.

Children whose parents are dyspeptic or asthenic or neurotic are very prone to inherit weak digestions. Such children should be taken in hand early, examined thoroughly, and a rigorous system of prophylaxis applied to their individual needs.

In normal adults, prophylaxis is largely a matter of common sense and moderation in living and the continuance of those habits

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of hygiene presumably learned in childhood. Particular pains should be taken that meals be eaten at regular intervals and under conditions free from mental preoccupation, worry or depressing emotions. The development of that common modern habit, tachyphagia,—rapid eating—should be especially avoided, as once established it is exceedingly hard to get rid of.

Adults who are known to be susceptible to digestive disorders should be particularly careful to live within their reserve as determined by complete and careful digestive studies. It cannot be too strongly recommended that they keep themselves under observation even at the times that they feel free from symptoms. This holds particularly true for patients who have undergone surgical operations on the digestive tract.

General Management.—As in all chronic conditions, the patient must be treated as well as the disease. The more intense the individualization, the more successful the therapy. At the preliminary general physical examination special effort should be made to rule out the possibility of disease lurking in some other system than the digestive tract, for it is well-known that dyspetic symptoms may arise from distant sources. As the result of such a general survey a good many leads may be opened up whose correction may help secure a good therapeutic result. Every doctor can recall cases where a headache thought to arise from "autointoxication" was found to be due to eye-strain or cerebrospinal lues or sinusitis or impacted molars; where persistent anorexia was found to be caused by unsuspected pulmonary tuberculosis; where flatulence was associated with hypertension and arteriosclerosis; where constipation arose from pelvic inflammation; and so on. It addition, even where frank gastrointestinal disease is present, all the associated defects should be remedied as quickly as posible. In this connection the special importance of sound teeth and gums need hardly be emphasized.

In a larger sense, too, successful therapy calls for serious consideration of personal as well as physical factors. The patient not only vegetates, but works, plays, rests and worries. The doctor should familiarize himself as much as possible with his patient's mental and emotional make-up. He should know something of his work and his responsibilities; he should be able to give sensible advice as to rest and recreation; he should inspire confidence and help restore hope and the "will to get well."

Diet.—The treatment of gastrointestinal disorders by dietary measures is recognized as fundamental by the laity as well as by physicians. Dietary rules and diet lists may properly be regarded as experience tables much like those in use by life insurance actuaries.

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These lists are built up as the result of the composite experiences of thousands of sufferers and, to a lesser extent, of actual scientific test and experiment. In short, they represent or furnish what might be called average lines of procedure. It should be well understood, however, that diet lists *as published* are for the benefit of the physician and are not to be handed directly to the patient. Indeed, so great are individual differences in response to foods that one cannot expect a prearranged diet list to suit every subject exactly. When planning a diet in actual practice, therefore, it is always best to begin by making a detailed record of the patient's eating habits, in order not only that his faults may be corrected, but that his personal peculiarities and idiosyncrasies may be given due consideration. A diet thus "made to order" takes the form of an individual prescription, and has just that advantage in suiting the needs of the patient.

Notwithstanding the variability of man's food and the large number of combinations of eatables that may be and have been invented it may be well to state at this point that there are in reality but three main objects for which diets are prescribed in gastrointestinal diseases. These objects are:

1. To allay gastrointestinal irritability.
2. To improve the state of nutrition.
3. To increase the bulk of the feces.

1. In such conditions as hyperacidity, ulcer, diarrhea, etc., only the most bland, non-irritating, and easily digested foods are indicated. By "most easily digested" we mean such foods as, in addition to being universally well-tolerated by dyspeptics, have been shown by special experiments, to leave the stomach most rapidly. In this class are usually included milk, eggs, well-cooked fish, meat-juice, finely chopped lean meat, mashed potatoes, purees, light puddings, Uneeda biscuit, toast, water.

On the other hand, the foods that experience has shown to be most difficult of digestion fall in the following four groups: a. Sour and spicey foods, e.g., vinegar, pickles, relishes. b. Fat and greasy foods, e.g., fat meats, fried foods, gravies. c. Sweets, e.g., pastries, candies. d. Foods with coarse, irritating residues, e.g., cucumbers, cabbage.

This simple grouping of the common foods, once mastered, renders the subject of dietetics relatively simple. It should of course always be remembered that the preparation of food is ever a matter of great importance, the same article being easy or difficult to handle depending on the way it is cooked. This is very well illustrated in every day experience in the case of cereals and potatoes.

2. It is not necessary for the physician to calculate calories in order to fatten a patient. All that is required is a scale and a measuring rod and a knowledge of the normal weight of a person for his age, sex, and height. The latter information can be obtained from life insurance tables such as those of Symonds, reproduced herewith. The height includes shoes and the weight includes ordinary clothing.

SYMONDS'S TABLE OF HEIGHT AND WEIGHT FOR MEN AT DIFFERENT AGES

Based on 74,162 Accepted Applicants for Life Insurance

	15-24	25-29	30-34	35-39	40-44	45-49	50-54	54-59	60-64	65-69
5 ft. 0 in.	120	125	128	131	133	134	134	134	131	...
1 in.	122	126	129	131	134	136	136	136	134	...
2 in.	124	128	131	133	136	138	138	138	137	...
3 in.	127	131	134	136	139	141	141	141	140	140
4 in.	131	135	138	140	143	144	145	145	144	143
5 in.	134	138	141	143	146	147	149	149	148	147
6 in.	138	142	145	147	150	151	153	153	153	151
7 in.	142	147	150	152	155	156	158	158	158	156
8 in.	146	151	154	157	160	161	163	163	163	162
9 in.	150	155	159	162	165	166	167	168	168	168
10 in.	154	159	164	167	170	171	172	173	174	174
11 in.	159	164	169	173	175	177	177	178	180	180
6 ft. 0 in.	165	170	175	179	180	183	182	183	185	185
1 in.	170	177	181	185	186	189	188	189	189	189
2 in.	176	184	188	192	194	196	194	194	192	192
3 in.	181	190	195	200	203	204	201	198	...	...

SYMOND'S TABLE OF HEIGHT AND WEIGHT FOR WOMEN AT DIFFERENT AGES

Ages	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
4 ft. 11 in.	111	113	115	117	119	122	125	128	128	126
5 ft. 0 in.	113	114	117	119	122	125	128	130	131	129
1 in.	115	116	118	121	124	128	131	133	134	132
2 in.	117	118	120	123	127	132	134	137	137	136
3 in.	120	122	124	127	131	135	138	141	141	140
4 in.	123	125	127	130	134	138	142	145	145	144
5 in.	125	128	131	135	139	143	147	149	149	148
6 in.	128	132	135	137	143	146	151	153	153	152
7 in.	132	135	139	143	147	150	154	157	156	155
8 in.	136	140	143	147	151	155	158	161	161	160
9 in.	140	144	147	151	155	159	163	166	166	165
10 in.	144	147	151	155	159	163	167	170	170	169

In practice one proceeds to make up the deficit between the patient's actual weight and his normal weight, by forced feeding. At the same time the energy output must be kept down as much as possible, absolute bed rest being enjoined where the speediest results are desired. It has been shown that in the latter condition (rest in

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bed) the body requires but six-sevenths the number of calories needed when the subject is up and about.

It is really a matter of secondary importance just what foods are selected for the fattening process. So long as the diet is well tolerated and the patient eats more than he has been taking of nutritious foodstuffs, the result will be achieved. A more detailed description of the usual procedure will be given in a subsequent section.

3. Increasing the bulk of the diet is a favorite method of treating constipation. This principle is particularly applicable in cases where the fecal mass is so far reduced and dried as to fail in its function of stimulating adequate intestinal peristalsis. The addition to the diet of fruits and vegetables that contain much fibrous residue, together with plenty of water, serves to increase the unabsorbable intestinal content and promote its regular evacuation.

Gastric Lavage.—There is hardly any single therapeutic measure which gives greater and more immediate relief than gastric lavage when properly executed. This procedure is primarily designed (except of course in cases of poisoning) for the removal of fermenting and decomposing residues whenever the stomach fails to empty properly from any cause. It is by no means a matter of indifference just when in the day lavage is practiced. By far the best time is in the late afternoon or early evening just before the last meal is taken. In this way the stomach is not only put in the best condition for the reception and digestion of what is often the heaviest meal, but is given the whole night in which to do it.

A very satisfactory technic calls for the use of the Ewald evacuator. This apparatus is nothing but a stomach tube into the end of which a rubber aspirating bulb is inserted. In detail, it consists of a standard size (No. 30 Fr.) stomach tube permanently connected to a short run (three to four inches) of rubber tubing by means of a window of glass tubing two to three inches in length. The object of this window is to facilitate observation of the inflow and outflow through the apparatus. The hard rubber tip of the aspirating bulb fits directly into the open end of the short piece of rubber tubing at the end of the stomach tube. The bulb itself is very much like a Politzer bag, only larger, and holds between three hundred and four hundred cubic centimeters.

Gastric lavage is performed as follows: The stomach tube is introduced in the usual manner. The aspirating bulb is then completely exhausted of air by pressure of the hand, is inserted into the end of the stomach tube, and the gastric residue evacuated. The contents thus recovered may be expressed into the first of a series of

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large graduates for subsequent study. The bulb is then filled with water, or any other lavage solution, and its contents are completely expressed through the tube into the stomach. The bulb is then allowed to refill slowly with the returning lavage water, it is detached, and its contents either discarded or saved in the second of the series of graduates. In this manner the procedure is repeated again and again until the return is clear. By comparing the successive wash waters in the series of graduates, as suggested, a good idea is obtained of the actual progress of the washing.

The amount of fluid to be used depends entirely upon how long it takes for the water to come back clear. Barring contra-indications on the part of the patient, every lavage should be continued until the return is quite free from residue. With the technic described, it is easy to avoid leaving water behind in the stomach, since the amount withdrawn by each successive aspiration should always equal the amount just introduced, namely, 300 to 400 c.c. This procedure will be found to be quite superior to the ordinary funnel method of gastric lavage, because it requires less bulky apparatus, is far neater and cleaner, and can be done much more quickly.

Duodenal Intubation.—The procedure of passing a tube into the duodenum is becoming more and more a matter of every day practice. The object of this manipulation may be experimental, diagnostic, or therapeutic in nature. The most common therapeutic intraduodenal procedures are:

1. Duodenal feeding.
2. Transduodenal flushing.
3. Stimulation of the flow of bile.
4. Introduction of anthelmintics.

The technic of intubation is by no means complicated. The patient must be fasting. Any of the numerous tips or buckets may be employed. The tip can usually be swallowed by the patient without assistance. If there is any difficulty the tip may be taken between the second and third fingers and placed on the back of the patient's tongue. It can then be forced down readily as the patient swallows. A stylet is practically never needed. When the tip has reached the stomach the patient lies on his right side and gradually swallows the required length (about 75 cm.) of tubing. The time at which the tip passes the pylorus is very variable. The position of the tip can of course be determined by fluoroscopy, but this is by no means essential, since the following tests are quite reliable:

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DIFFERENTIAL TESTS

Bucket in Stomach	*Bucket in Duodenum*
1. Aspiration through the tube withdraws a clear fluid, seldom bile-tinged, generally positive to Congo paper.	1. Aspiration withdraws golden-yellow, viscid bile, negative to Congo paper.
2. If a definite amount (say 15 c. c.) of water is injected, and the injection is followed by a syringeful of air to clear the tube, the greater part (more than two-thirds of this water) can be withdrawn on the next aspiration.	2. The water injected flows on into the intestine and but a small amount (less than one-third, if any), can be recovered by aspiration.
3. Injection of air is not followed at once by borborygmi.	3. Injection of air is followed at once (in some cases) by borborygmi.

Drug Therapy.—There is no real necessity for the use of very many drugs in gastrointestinal practice. In fact the simpler and the more direct the therapy the better. For the great majority of cases the following four groups of drugs will meet all the indications:

1. Antacids.
2. Hydrochloric acid.
3. Antispasmodics.
4. General sedatives, hypnotics, anodynes.

To these it may at times be necessary to add a few salines, mineral oil and occasional cathartics. One can dispense almost entirely with appetizers, tonics, and predigested foods. It is best to prescribe each drug separately, even when several are indicatd, because in this way the action of each medicine can be better observed and better controlled.

Physical Therapy.—Massage has long enjoyed considerable reputation in the treatment of constipation. Active exercises, of the setting up variety, are readily carried out by many patients, and give good results. In asthenics, special exercises for increasing the girth of the lower chest are strongly to be recommended. Physical training under the supervision of careful gymnasium experts may be prescribed to improve nutrition. Exercise with some forms of the Zander apparatus is also of benefit in the physically under-developed.

In June

The Treatment of Ptosis and the Asthenic State

By JOHN L. KANTOR, M.D.

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Medical History
Continuing the
MEDICO-HISTORICAL BULLETIN

RHAZES
(860-932)

By Victor Robinson, M.D.

In the science of medicine, the Arabians have been deservedly applauded. The names of Mesua and Geber, of Rhazes and Avicenna, are ranked with the Grecian masters; in the city of Bagdad, eight hundred and sixty physicians were licensed to exercise their lucrative profession: in Spain, the life of the Catholic princes was intrusted to the skill of the Saracens, and the school of Salerno, their legitimate offspring, revived in Italy and Europe the precepts of the healing art.

GIBBON: *History of Rome.*

What a noble people were the Arabs! We are indebted to them for much knowledge and for many inventions of great utility; and we should have still more to thank them for, were we fully aware of the benefits we have derived from them. What a pity that their works should be suffered to moulder into dust, without being made available! What a shame that those acquainted with this rich language should meet with so little encouragement! . . . Had I still twenty years to live, and could hope for an abundant supply of Arabic works, I would learn Arabic.

BECKMANN: *History of Inventions.*

Rhazes was a man of rare attainments, who linked the knowledge of his age to the achievements of the past, a tireless writer of immense productiveness and versatility, an inspired teacher—but his also was a more precious gift than erudition, the power to read in the book of nature itself, the clinical insight which ever sees something fresh at the bedside and assures to each case comprehension and treatment according to its individuality. Herein—not account of his book-learning, in which he was equalled or excelled by many of his successors, but as a clinician—he stands high above all the Arabic, possibly above all medieval physicians, although he never entirely succeeded in emerging from the shadow of Galenism.

NEUBURGER: *History of Medicine.*

In sinuous lines, one after one, they came: long caravens of camels, laden not with merchandise but with Greek manuscripts, crossing the desert, bound for Bagdad. Silent and docile creatures, burdened with immortal parchments, but never wondering why Hippocrates and Aristotle and Galen were loaded on the dromedary's hump to be carried across alien sands. . . .

The torch of Hellas had flickered low, and the human mind was lost in darkness. It was medievalism, and science was in exile. Observation was blind, but the ears of credulity length-

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ened. Experiments were not performed, but miracles were expected. Supernaturalism had stifled reason. Fanaticism had triumphed over philosophy: the heel of St. Paul was on the neck of Archimedes. When Bishop Cyril's mob dragged from her chariot the beautiful and learned Hypatia, and she was stripped naked and pulled through the streets, when the club of Peter the Reader smote her, and the monks scraped the flesh from her bones with shells, Plato's last representative was gone from once-glorious Alexandria. Cyril's sect grew and grew in numbers; the world in which we live was neglected, for the Judgment Day was pronounced to be at hand, and all were concerned only with the world to come. Euclid lay forgotten, for the ecclesiastics desired to know only enough mathematics to enable them to learn the rule by which the date of Easter could be computed. The garden in which Theophrastus had founded the science of botany was overrun with weeds and monkish tales, and in the city where Democritus laid the foundation of physical science, theologians gravely argued how many angels could stand on the point of a needle, and whether it was the first or second or third person of the Trinity that created the world. Everywhere the human brain seemed weary of thought, and those evil twins, superstition and persecution, reigned all over Europe.

The ever-deeping ignorance choked the fires that once had burnt at Athens, but a spark fell in the East, brought hither by the hunted Nestorians, and the curious Arabians fanned the dying ember until it blazed anew. The Moslem was then in power, his dominion extending from the Mountains of Gold to the Atlantic Ocean; Memphis and Carthage were his, and from the streets of Cordova to the banks of the Indus the mosques were alive with thanks to Allah. The victorious Saracen laughed at Rome, he wrested Jerusalem from the Christians, and in the disdain he sold the Colossus, for old brass, to a Jew.

But the conquering Mohammedans were in turn conquered by the Greek manuscripts. Their bigoted insularity disappeared in veneration of the Hippocratic aphorisms. No longer referring to all Europeans as unbelieving dogs, they pondered over the works of Dioscorides. Athens and Rome now anathematized the pagan thinkers, so Hippocrates and Aristotle and Galen left their homes, and the far-stretching caravens of camels brought the precious parchments to Bagdad. Then Honain, the great translator, was happy, and with loving enthusiasm rendered the Greek classics into the Arabic tongue; when he finished a treatise, he brought his work to the enlightened Caliph Almamon, in whose presence it was carefully weighed, and Honain received for every manuscript-translation its weight in gold.

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Never were there translators like the Arabians; considering the Greek texts as of almost Koranic sacredness, they copied, compiled, elucidated, amplified, and commented upon the classics with amazing industry—but never criticized, Bagdad's contact with these manuscripts transformed the Asiatic city into an eastern Athens. The fanatical Moslems became men of science, zealously cultivating geology and astronomy, fostering the early steps of chemistry, establishing the first pharmacies, and enriching materia medica by the addition of such important drugs as camphor, tamarinds, cassia fistula, senna, and nux vomica. Many treatises of the oriental physicians were translated into Latin, and became authorities in the West. The Arabic system of medicine imposed itself upon Europe, and there was a time when Avicenna eclipsed Hippocrates. The Arabian influence lasted until the threshold of modernity, and whoever looks at the elaborate title-page of the first London Pharmacopeia, will find it ornamented with four figures: Hippocrates and Galen, the Greeks; and Mesue and Avicenna, the Arabs.

But never did the Arabs equal the Greeks, and the sole reason the former loomed so large upon the scientific horizon is because the Europeans were afflicted with such mental sloth that they could absorb nothing but dogma. At the time when the Arabians measured the height of the atmosphere and catalogued the stars, and observed that colchicum was beneficial in gout, the monasteries were buying milk purporting to come from the breasts of the Blessed Virgin.

Yet no better proof is needed that the Arabians were essentially medievalists and not Hellenes— worshippers of authority and not free investigators—than the naive remark of one of the earliest and most original members of the Arabian school: "If Galen and Aristotle," said Rhazes, "are of one mind on a subject, then of course, their opinion is true. When they differ, however, it is extremely difficult to decide which opinion to accept."

Rhazes, known in the East as Abu Becr Mohammed Ibn Zacariya Ar- Razi, was a Persian, born near Khorazan, perhaps in the middle of the ninth century. The date 860 is usually given as his natal-year, but it is hardly more than a surmise. Had he been a military commander who slaughtered multitudes, instead of a health-bringer, history would have been more concerned with his birthday.

Rhazes turned his attention to medicine only after he had reached middle-age—according to Ibn Khallikan, he was forty before he began to devote himself to physic. When Rhazes

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was young, he played the flute and cultivated his voice, but according to Ibn Juljul, "on reaching the age of manhood, he renounced these occupations, saying that music proceeding from between mustachios and a beard had no charms to recommend it." A curious essay might be written on those men who undertook to study medicine late in life, and yet achieved success.

Rhazes' teacher in the healing art was the Jewish physician, At-Tabari, who is frequently quoted by Rhazes, but whose books seem to have disappeared yet one of At-Tabari's aphorisms, which has come down to us through the ages, should never be forgotten: "An ignorant physician hastens death."

In those days traveling was a part of the medical curriculum, and Rhazes knew Jerusalem, and journeyed through Africa, and saw the lamps of Cordova—but he returned to the minarets of Bagdad, the magic city of the Arabian Nights. An hundred famous physicians contended for the directorship of the hospital of Bagdad, but the favor fell upon Rhazes. He developed into the chief clinician of the Arabian school, his material being so extensive that in recommending a mode of treatment for sciatica —sharp clysters until blood was drawn—he was able to say that he had seen this method successfully tried upon a thousand patients. It was the Golden Age of Arabian Medicine, and Rhazes was its effulgence. Pupils—Andalusian, Mozarab, Persian, Berbek, Hebrew, Egyptian—voyaged from afar to seek the teacher who was esteemed the Galen of the Arabians. What did they hear from the lips of Rhazes, over a thousand years ago, among the date-palms of Bagdad? Listen, as did those turbaned scholars, to a fragment of Rhazes' lecture, *On the Factors which Alienate the Public from the Physician*:

> Among the circumstances which cause the hearts of the people to turn away from the reputable physician is the delusion that the medical man should know everything and should ask no questions. If he inspects the urine or feels the pulse he is supposed to know what the patient has eaten and what he has been doing. I myself, when I began to practice medicine, had resolved to ask no questions when the urine had been given me, and had been much honored. Later, when it was seen that I had made circumstantial inquiries, my reputation sank.
>
> Another circumstance which brings physicians into contempt is that many diseases are too little removed from the border-line of health and are thus difficult to recognize and cure; others, malignant in themselves, externally appear trivial. When the layman sees that the physician is in doubt concerning his cure he draws it as a certain inference that the physician will understand still less of severer and more extensive illnesses. This is a false analogy. The symptoms of such diseases are less obvious because they are slighter deviations from the normal, and their cure is more difficult because no drastic remedies can be applied, but

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only those the effect of which is gradually brought out, such as diet, etc. An official of the hospital complained of difficulty in moving some of his finger joints on account of a small but very hard sore which had for some time resisted the remedies he had applied. He openly reviled the physicians, saying: "If your art does not suffice to cure a small sore on the finger, how can you treat broken ribs and arms?" He then sought treatment from the women and the vulgar.

If it be argued that a malady should not be entrusted to one who may make a mistake, we rejoin: Matters must be entrusted to him who is furthest from error, who errs most seldom. He who otherwise refuses to employ a physician would resemble him who would not ride a horse nor sleep in a canopied bed because horses stumble and the canopy might fall down—which are rare events.

A physician is sometimes undervalued who takes trouble over an incurable complaint; but the imperfection of the art should be considered, in this respect unlike other arts, of which men know more than is necessary, while in medicine men have not yet attained to the indispensable and do not possess a remedy for every ill. The fault is therefore with the art, not with the physician.

The public demands that the physician should cure in a moment, like a magician, or that he should at least employ pleasant methods, which is not at all times and in all cases possible; to blame the physician on Nature's account is a great injustice. Thus it is that sorcerers make their fortune, even though they behave iniquitously, and their incompetent work brings them a good livelihood, while the physician must often endure poverty.

The heart of the public is further turned from the capable physician and towards fools, because the ignorant sometimes succeed in curing complaints where this has not been done by the most famous physicians. The causes are manifold, luck, opportunity, etc. Sometimes the qualified physician effects an improvement which is not, however, yet visible; the patient is then placed under another doctor who rapidly brings about a cure and obtains the entire credit.

Many a quack is experienced in the treatment of a single complaint, or two, according to his practice, or because he has seen the treatment of an intelligent physician. Ignorant people, therefore, think that he has equal dexterity in everything and entrust themselves to him. It is a great mistake to think that, because he has a genuine remedy for one complaint, he has one for all. I have myself learnt remedies from women and herbalists who had no knowledge of medicine.

Remember that the well-trained physician is often in doubt and may take a long time to find the proper remedy. This occurred even to Galen.

Much of this sounds modern—and occidental. The voices of the past often speak in contemporary tones. We are all children of the same Mother Earth, and from the vocabulary of man the word "foreigner" should be erased.

Over two hundred treatises were written by Rhazes, including that vast undigested encyclopedic mass, the *Continent of*

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these huge folios, but without method or arrangement, or any attention to style. Rhazes left this work in manuscript, perhaps realizing that few could cross this unclassified *Continent*. But using the *Continent* as a basis, he prepared another work, dedicated to the Persian prince, Al-Mansur, and thus known as the *Work to Al-Mansur,* here the presentation being concise and elegant, and the topics so well-arranged that it became one of the most popular of compendiums, and for centuries was used as a text-book in the colleges.

The *Work to Al-Mansur* is divided into ten books: the first of these ten books is on Anatomy and Physiology, the second on Temperaments, the third on Food and Simple Medicines, the fourth on Means of Preserving Health, the fifth on Skin Diseases and Cosmetics, the sixth on Diet of Persons on a Journey, the seventh on Surgery, the eighth on Poisons, the ninth on Treatment of General Diseases, and the tenth on Fevers. The *Work to Al-Mansur* long remained "the great magazine of all the Arabian physick,"—and portions of it were translated by so original a modern as Vesalius—but the essence of these books came from Hellas. The work of Rhazes was built upon Hippocrates and Galen, and upon their commentators, Oribasius, Ætius, and Paulus Ægineta. Yet throughout the compilation are interspersed many Rhazian observations.

Let us ask questions of Rhazes, as did the students of Bagdad, and hear the replies that are more than ten centuries old. Some have been rendered obsolete by time, but others are still of medical value. In our cathecism, we will make use of the references to Rhazes in the Banchory scholar's commentary on Paulus Ægineta, an author to whom Rhazes was under obligation.

Master, how can the perspiration be made fragrant? Eat of the heads of cardui, and in the drink put the seeds of juniper or cassia lignea. Drink aromatic wine, and rub the body with pastils of roses.

What should be done for a person who is intoxicated? Apply vinegar and oil of roses to the head, and camphor and water to the nose. Employ an emetic, and put the hands and feet into cold water. After a long sleep, prescribe a bath.

What is the treatment for a person injured by cold? Lay him in a warm apartment, and with heated hands rub the whole of his body, with the exception of the head, which is to be warmed with hot cloths. Persons having warm bodies are then to lie down in bed beside him; and he is to take a draught containing asafetida, myrrh, pepper and strong wine. When the

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respiration is fairly restored, he is to take some nourishing food and wine; and is then to be covered up with many blankets and left to sleep. When he awakes, he is to be put into a hot bath, and after remaining for a long time in it, he is to be strongly rubbed when he leaves it with the oil of lilies or narcissus, to which costus, castor, musk and spurge have been added.

What precautions are to be observed in vomiting? Much vomiting hurts the liver, breasts, eyes, and lungs, causing hemoptysis. Before taking an emetic, bind a compress on the forehead, and after emesis, wash the mouth and face with hydromel. Individuals who have long necks, prominent chests, and who are lean, ought to abstain entirely from emetics.

What rules should be observed in imbibing water? A draught of water immediately after eating impairs digestion, but is proper after digestion has taken place. Ice, by congealing the stomach and injuring the nerves, is prejudicial to the health, especially of old persons. Water, cooled in snow, is permissible, but its effects are to be counteracted by a moderate allowance of wine.

What are the directions for reducing obesity? Corpulent persons should abstain from animal food, wine, milk and all sweet things; let them live upon pot-herbs, and such things as are saltish and sour; they should take purgatives and diuretics, exercise hard, use much friction, and frequently remain long in the bath.

How is emaciation to be treated? By protracted sleep, by food consisting of fat meat and the nutritive legumes, and by wines which are red, thick, and sweet; by gentle friction with oil, and the affusion of tepid water over the body; by bituminous and sulphureous baths, which should be taken only after the food is digested, for if taken too soon, it loads the body with unconcocted chyle, and if had recourse to at any other time, it rather induces emaciation.

What is the treatment for epistaxis? Give a styptic powder containing quicklime, vitriol, galls and red arsenic. Apply snow to the head. In extreme cases, the cautery is necessary.

What are the causes of ileus? Inflammation of the bowels, debility of the expulsive faculty, and indurated feces.

What are some of the precautions to be observed in venesection? Forbid food immediately after bleeding, as the empty veins will absorb the chyle before it is properly digested, which will prove a pabulum of disease. Forbid bleeding when the stomach is loaded with crudities, lest they should be absorbed and carried over the system. In retention of the menses, open the saphena,

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or apply a cupping-instrument to the ankle. In acute inflammation, abstract blood fully from the opposite part, so as to produce revulsion, but when it is chronic, take the blood from the part affected. In bleeding a person who is intoxicated, apply two bandages about the arm, and have proper attendants to restrain the bleeding which is often difficult in such cases.

What are the remedies for synochus? Bleeding, mild purgatives, acidulated drinks, restricted diet, and complete abstinence from wine. The bath is to be recommended, but it should be delayed until the decline of the fever.

How shall we treat cataract? By couching, extracting, and sucking out the cataract. When it cannot be properly depressed, it must be torn. It may be extracted by opening the lower part of the cornea, and it may be sucked out through a glass tube.

What is the treatment for menorrhagia? Astringent trochisks containing the recrementum ferri; cupping-instruments applied to the breasts; stuffing the vagina with wool smeared the mixture of frackincense, wild pomegranate-flowers, galls, antimony, acacia, and alum. Epithemes are also to be recommended, and when these do not succeed, pessaries made with ascharotics.

What is the cure for love-sickness? Try repeated distractions, fasting, walking and frequent intoxication.

What medicines are useful in impotence? Among the aphrodisiacs are nettle-seed, elecampane, rape-seed, mint, rocket, cresses and cubebs.

What are the symptoms of a displaced womb? In displacement of the uterus, there is vehement pain with distension of the parts; the woman cannot rise nor sit but with difficulty; the urine is retained and sometimes the feces. Restore the uterus to its position by drawing its mouth in the opposite direction.

What are the causes and treatment of dystocia? Difficult parturition may arise from the mother, the fetus, or the secundines. The head is the only natural presentation. In other cases, the life of the mother or child is endangered, although many living children are born by the feet. When delivery of the head is found difficult, employ ligatures or fillets. When the feet or hands present, restore the position, or if that is impossible, bring down the feet. Warm baths and lubricants are of service.

What is the treatment for abscesses? When there is any hope of producing resolution, scarification is the method of choice. When the pain is violent, use hot and humid applications, with the addition of narcotics. After the abscess has been opened

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with the knife, desiccative applications are indicated, and not ointments containing wax or oil. Abscesses in the limbs are to be opened by a straight incision, but those about the ankles by a circular, as they are apt to terminate in fistulae.

What are the contents of an enterocele? An intestinal hernia generally arises from dilatation of the passage which leads from the cavity of the abdomen to the testicle. In ordinary cases, there is no rupture of the peritoneum. The contents of the hernial tumor are intestines or omentum.

How should bones be sawed? Stretch the flesh upwards and downwards, with a piece of cloth, so that it may not come in the way of the teeth of the saw. When it is necessary to saw a rib or bone near any important membrane or organ, use a tabella to protect the soft parts from the saw. When the os brachii, or tibia is diseased, extract it entire, but we must not meddle with the head of the femur or the verterbrae.

What should the surgeon remember about dislocation of the shoulder? Owing to the shallowness of the glenoid cavity and the weakness of the ligaments, the bones at the shoulder are more subject to luxations than those of any other point. When dislocated, the top of the shoulder is sharper than natural, the head of the humerus is felt in the armpit, the arm cannot be brought to the sides without pain, or raised to the head at all. When the accident happens during delivery or in childhood, the arm does not grow to its natural size. The dislocation can occur only downwards.

The great physicians of the past have been aphorists, and the Rhazian adages will never lose their meaning: "Treat an incipient malady with remedies which will not prostrate the strength." "With a learned physician and an obedient patient, sickness soon disappears." "When you can cure by regimen, avoid having recourse to medicine; and when you can effect a cure by means of a simple medicine, avoid employing a compound one." "Truth and certainty in medicine is an unattainable goal; and the healing art, as it is described in books, is far inferior to the practical experience of a skilful and thoughtful physician."

The writings of Rhazes contain ingenious and acute observations on topics ranging all the way from hiccough and purgatives to spinal injury and embryotomy. He knew that the pupil contracts to light, and that the remedy for pediculosis of the eyelids is mercurial ointment. He urged the use of cold water in inflammatory fever, and insisted that fever be treated according to its causation. He taught that jaundice was caused by obstruc-

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tion of the bile-passages, he knew the perils of miasmata, he realized that the nerves of sensation and of motion may be effected separately. He described an instrument for the removal of foreign bodies from the esophagus, and invented a lead catheter which he preferred on account of its flexibility.

European students of Arabian medicine credit Rhazes with having given a fuller account of curvature of the spine, and of the principles of catheterism, than any other author up to his time; he is further credited with being the first who wrote an entire book on pediatrics, the first who introduced chemical preparations into practice, the first who described spina ventosa, the first who maintained that disorders of the bladder are accompanied by hematuria, and the first who employed certain urethral injections.

The classic exposure of quacks is Rhazes' spirited account, and any sketch of the great Persian would be incomplete without it:

There are so many little arts used by mountebanks and pretenders to physic, that an entire treatise, had I a mind to write one, would not contain them: but their impudence and daring boldness is equal to the guilt and inward conviction they have of tormenting and putting persons to pain in their last hours, for no reason at all.

Now some of them profess to cure the falling-sickness, and thereupon make an issue in the hinder part of the head, in form of a cross, and pretend to take something out of the opening, which they held all the while in their hands. Others give out, that they can draw snakes or lizards out of their patients' noses, which they seem to perform by putting up a pointed iron probe, with which they wound the nostril, until the blood comes: then they draw out the little artificial animal composed of liver, etc.

Some are confident they can take out the white specks in the eye. Before they apply the instrument to that part, they put in a piece of fine rag into the eye, and taking it out with the instrument, pretend it is drawn immediately from the eye. Some again undertake to suck water out of the ear, which they fill with a tube from their mouth, and hold the other end to the ear; and so spurting the water out of their mouths, pretend it came from the ear. Others pretend to get out worms, which grow in the ear, or roots of the teeth. Others can extract frogs from the under part of the tongue; and by lancing make an incision, into which they clap in the frog, and so take it out.

What shall I say of bones inserted into wounds and ulcers, which, after remaining there for some time, they take out again? Some, when they have taken out a stone from the bladder, persuade their patients that still there's another left; they do this for this reason: to have it believed that they have taken out another. Sometimes they probe the bladder, being altogether ignorant and uncertain, whether there be a stone or no. But if they don't find it, they pretend at least to take out one they have in readiness before, and show that to them.

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Sometimes they make an incision in the anus for the piles, and by repeating the operation often bring it to a fistula or an ulcer, when there was neither before. Some say they take phlegm, or a substance like unto glass, out of the penis or other part of the body, by the conveyance of a pipe, which they hold with water in their mouths. Some pretend that they can contract and collect all the floating humors of the body to one place by rubbing it with winter cherries, which causes a burning or inflammation; and then they expect to be rewarded, as if they cured the distemper; and after they have suppled the place with oil, the pain presently goes off.

Some make their patients believe they have swallowed glass; so, taking a feather, which they force down the throat, they throw them into a vomiting, which brings up the stuff they themselves had put in with that very feather. Many things of this nature do they get out, which these impostors with great dexterity have put in, tending many times to the endangering of the health of their patients, and often ending in the death of them.

Such counterfeits could not pass with discerning men, but that they did not dream of any fallacies, and made no doubt of the skill of those whom they employed: till at last, when they suspect, or rather look more narrowly into their operations, the cheat is discovered. Therefore no wise men ought to trust their lives in their hands, nor take any more of their medicines, which have proved so fatal to many.

The text-books of an age are much alike, and when Rhazes opened his *Division of Diseases* by first enumerating the maladies of the head, gradually descending to those of the feet, he was simply following the prevalent but unscientific fashion. But Rhazes wrote a slender *Treatise on Small-pox and Measles,* and here he followed no one. Before Rhazes, the references to pox were of the vaguest sort, but Rhazes placed this disease on the medical map. His description stands out as unrivalled—the original and still surviving landmark in small-pox. For once, an Arabian touched hands with Hippocrates and Aretæus. It is not his bulky *Continent,* but his tract on *Small-pox and Measles* which makes Rhazes a pathfinder in medicine.

In the preface, Rhazes informs us how he came to compose this work:

It happened on a certain night at a meeting in the house of a nobleman, of great goodness and excellence, and very anxious for the explanation and facilitating of useful sciences for the good of mankind, that mention having been made of the small-pox, I then spoke what come into my mind on the subject. Whereupon our host (may God favor men by prolonging the remainder of his life) wished me to compose a suitable, solid and complete discourse on this disease, because there has not appeared up to the present time, either among the ancients or the moderns, an accurate and satisfactory account of it. And, therefore, I composed this treatise, hoping to receive my reward from the Almighty and Glorious God, and awaiting his good pleasure.

Rhazes divided his treatise into fourteen chapters, the first

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dealing with the causes of the small-pox, and how it comes to pass that hardly anyone escapes the disease; the second is an enumeration of those habits of body which are most disposed to the small-pox, and also of the seasons in which the disease is most prevalent; in the third, he discusses the symptoms which indicate the approaching eruption of the small-pox and measles; in the fourth he specifies the articles of the regimen or treatment of the small-pox in general; the fifth deals with the preservation from the small-pox before the symptoms of the disease appear, and the way to hinder the multiplying of the pustules after the appearance of the symptoms; the sixth is concerned with those things which accelerate the pustules of the small-pox and their appearance externally, and which assist nature; the seventh tells of the care to be taken of the eyes, throat, joints, ears and those parts of which it is necessary to take care upon the appearance of the symptoms of the small-pox; the eighth explains the factors which hasten the ripening of those pustules which can be ripened; the ninth is devoted to the drying of the pustules; the tenth contains the mode of taking away the eschars and dry scabs; the eleventh is a discourse on the method of removing the marks of the small-pox; the twelfth treats of the patient's food in the small-pox; the thirteenth contains prescriptions and directions for regulating the patient's bowels in the small-pox; and the final chapter points out the fatal and mild species of small-pox and measles.

In spite of Rhazes' extensive practice, it is claimed he never amassed wealth because instead of forcing fees from his poor patients—and most patients are poor—he relieved their financial distress from his own pocket—truly a remarkable physician! But Ibn Jujul relates a story that is not to Rhazes' credit:

Rhazes composed a treatise on alchemy—the pitfall of science—and presented it to the same Al-Mansur to whom he had dedicated more serious work.

Impressed with its possibilities and promises, Al-Mansur bestowed a thousand dinars upon the author, adding, "I wish you to put in practice what you have laid down in this book."

"That is a task," answered Rhazes, "for the execution of which ample funds are necessary, as also various implements and aromatics of genuine quality; and all this must be done according to the rules of art, so that the whole operation is one of great difficulty."

"All the implements that you require," replied Al-Mansur, "shall be furnished to you, so that you may put in practice the rules contained in your treatise."

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Even then Rhazes remained silent, and spoke only to admit the impossibility of performing what his treatise promised.

"I should never have thought," said Al-Mansur, "a philosopher capable of deliberate falsehood in a work represented by him as a scientific treatise, and one which will engage people's hearts in a labor from which they can derive no advantage. I have given you a thousand dinars, but I shall assuredly punish you for committing a deliberate falsehood."

Raising his whip, the prince of Khorasan struck Rhazes on the head, and this blow was held responsible for the formation of the cataract which later afflicted Rhazes. A surgeon came to operate upon him, and Rhazes asked him how many membranes the eye contained. The ophthalmologist did not know, so Rhazes sent him away. When Rhazes became completely blind, his friends urged him to permit the operation, as he might recover his sight, but like a true philosopher, Rhazes responded, "No, for I have seen so much of the world that I am weary of it." So in poverty, neglect and blindness passed away the man whom the modern Mead considered "the greatest physician of the age he lived in."

How frail is an empire compared to a book! Gone is the splendor of the Caliphs, and the once-conquering simitars of the Islams lie low in dust, but the *Treatise on Small-pox and Measles* —translated into Latin and Greek and French and German and English—excites admiration afresh in each succeeding generation. What now remains to remind us of the Moslem's conquest? Neither political power in Europe nor far-stretching armies anywhere, but whenever we turn the pages of Rhazes' treatise, the glory of Bagdad lives again, and once more we salaam this pathfinder in medicine.

In June

MARCELLO MALPIGHI

By Victor Robinson, M. D.

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Medical Bookland

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Encyclopedia of Sexual Science

The Sexual Life of Our Time in Its Relations to Modern Civilization, by **Iwan Bloch, M.D.** Translated from the German by Eden Paul, M.D. Cloth, 790 pages, $7.00. New York: Rebman Co.

In 1901, when Julius Pagel published his Biographical Lexicon of famous physicians of the nineteenth century, Iwan Bloch was only twenty-nine years of age, but the young man was already a celebrity, and had his paragraph in Pagel:

Iwan Bloch, born 1872 in Delmenhorst (Oldenburg), studied in Bonn, Heidelberg, Berlin, Dr. med. 1896, since whcih year he devoted himself to dermatology and to historical sudies, settled in 1897 in Berlin as specialist in dermatology. Works: Several polemic-articles against **"Bactericide" tripper-therapie,** Contribution to the History of Skin Diseases, History of Scientific Nursing (1899), several new documents on History of Ancient Medicine (on a Greek papyrus of medico-forensic contents). new document on the history of the spreading of the Guinea-worm in ancient times, monograph on the Origin of Syphilis (Jena 1900).

Since this date, Dr. Bloch has become widely known as the author of *The Sexual Life of Our Time*, a work of encyclopedic proportions. After six German editions appeared, the book was Englished by that incomparable translator, Eden Paul. *The Sexual Life of Our Time* is one of the most important surveys of sexology in any language, and will long remain a monument to the erudition and industry of its talented author. He discusses in a masterly manner, with most interesting and copious references, every department of sexual science, such as the phenomena of human love, physical and psychical differential sexual characters, the way of the spirit in love, the artistic element in modern love, the social forms of the sexual relationship, free love, prostitution, venereal diseases, the anthropological aspect of psychopathia sexualis, misogyny, the riddle of homosexuality, sadism and masochism, sexual fetichism, sexual perversions, offences against morality from the forensic standpoint, the question of sexual abstinence, sexual education, the prevention of conception, sexual hygiene, sexual life in its public relationships, the literature of the sexual life, and the modern outlook on sexology.

The spirit that animated this work will be found in Iwan Bloch's own words:

Truth is always a good thing, even truth regarding the sexual life. Neither prudery nor moral hypocrisy can controvert this proposition. He who recognizes the immense importance of sexuality in relationship to civilization at large—he who, like the author of the present work, has been occupied for many years in the study of the subject from the points of view of medicine, anthropology, ethnology, literature, and the history of civilization—is not only entitled, but will also consider it his duty, to publish his investigations, to make publicly known his views and his opinions, and to take a definite and clear position in relation to the burning questions of the day in this province of thought.

This volume is a liberal education in sexual science, and as such it deserves a place on the shelf of every modern physician.

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IWAN BLOCH

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Dr. med. Iwan Bloch
Spezialarzt
für Haut- und Sexualleiden.

Berlin W. 15, 5. 1. 20
Joachimsthalerstr. 9.

Herrn
Dr Georg Hirschfeld
Berlin

Verehrtester Herr Doktor!

Ich teile Ihnen mit, daß mich die British Society for Sex Psychology in London zum Honorary Member (Ehrenmitglied) gewählt hat, was Ihnen gewiß auch Freude machen wird. Herzl. Gruß

Ihres Dr Iwan Bloch

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Library Suggestions

ANDERS, JAMES MESCHTER: *Text-Book of the Practice of Medicine,* 1920, fourteenth edition, with the assistance of JOHN H. MUSSER, JR. Cloth, 1284 pages, 80 illustrations, $10.00.

BANDLER, SAMUEL WYLLIS: *The Endocrines,* 1920. Cloth, 486 pages, $7.00.

BROWN, JAMES CAMPBELL: *History of Chemistry,* 1920, second edition, edited by HENRY HILTON BROWN. Cloth, 564 pages, 107 illustrations, $6.00.

CARMAN, RUSSELL D.: *Roentgen Diagnosis of Diseases of the Alimentary Canal,* 1920, second edition. Cloth, 676 pages, 626 illustrations, $8.50.

CHOULANT, LUDWIG: *History and Bibliography of Anatomic Illustration,* 1920, translated and edited, with notes and biography, by MORTIMER FRANK, with biographical sketch of the translator and two additional sections, by FIELDING H. GARRISON and EDWARD C. STREETER. Cloth, 462 pages, profusely illustrated, $10.00.

DUCLAUX, EMILE: *Pasteur, the History of a Mind,* 1920. Translated by ERWIN F. SMITH and FLORENCE HEDGES. Cloth, 363 pages, illustrated, $5.00.

HALL, G. STANLEY: *Morale, The Supreme Standard of Life and Conduct,* 1920. Cloth, 376 pages, $3.00.

KELLY, HOWARD ATWOOD, and BURRAGE, WALTER L.: *American Medical Biographies,* 1920. Cloth, 1320 pages, $15.00.

LEVINSON, ABRAHAM: *Cerebrospinal Fluid in Health and in Disease,* 1919. Cloth, 231 pages, 56 illustrations, including 5 color plates, $3.50.

MARSHALL, CHARLES EDWARD: *Microbiology, A Text-Book of Microörganisms General and Applied,* 1921, third edition. Cloth, 1043 pages, 200 illustrations, $4.00.

MORSE, JOHN LOVETT: *Disease of Children,* 1920, third edition. Cloth, 639 pages, illustrated, $7.50.

RICHARDS, LINDA: *Reminiscences of America's First Trained Nurse,* 1915. Cloth, 121 pages, 3 illustrations, $1.00.

SPALDING, JAMES ALFRED: *Lyman Spalding, Originator of United States Pharmacopeia,* 1916. Cloth, 380 pages, illustrated, $3.00.

STILLMAN, JOHN MAXSON: *Paracelsus, His Personality and Influence,* 1920. Cloth, 184 pages, illustrated, $2.00.

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MODERN TREATMENT OF VENERAL DESEASES

I. The Treatment of Specific Urethritis, Anterior

By A. L. WOLBARST, M. D.

Cystoscopist and Chief of Urologic Clinic, Beth Israel Hospital; Visiting Genito-Urinary Surgeon, West Side Dispensary; Consulting Urologist, Manhattan and Central Islip State Hospitals, etc.

Before the physical examination is made, a careful history should be taken. This is of great value and importance, especially as regards the number and dates of previous infections, their complications, their duration, and the health of the patient during the intervals. These data should be recorded with the greatest possible accuracy. The writer has devised a card for this purpose, which has proved most serviceable.

URETHRITIS (acute / chronic) No. ..... Date..... 192... Dr. WOLBARST

Name.....Address .....Age..... (Married / Single)

Duration .....Number of Attack .....Treatment (?) . ..... Occupation.....

Previous Attacks (Date / Duration) 1st .....2d..... ....3d..... ..... 4th.....

IRRIGATION TEST

Discharge { Profuse / Moderate / Slight / None / Morning drop } Urine { 1 cl. ....1..... 3 .... Frequency { Day..... / Night..... } / 2 cl..... .. .. 2(Control).. ..... 4 M. U.. .....Pain..... }

Prostate .....Vesicles.....Stricture?..... .....

Meatus..... ....Testes.....Joint lesions?..... . .....

Gonococci?..... .....Epididymitis..... .....Other Complications.....

Chief Complaint ....

CASE RECORD

Referred by Dr.....

Date	Discharge	URINE 1	URINE 2	Massage	Complications General Cond'n	Treatment

The history having been taken the external genitals are carefully examined, especially the urinary meatus. A pin point meatus presages trouble ahead. It means lack of drainage and increased pain on micturition, and it favors extension of the inflammation to the posterior urethra and the development of complications. There need be no hesitation in enlarging the meatus as the first step in the treat-

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ment. The benefits derived are far greater than any possible risk of wound infection; in fact, such infections rarely if ever occur.

By means of the simple two glass test we determine whether the anterior urethra alone is affected, or the posterior as well, and what complications, if any, exist; and we must judge by the complex of symptoms how virulent and extensive the infection is. All these factors should influence the choice of the method to be pursued in treating the disease.

The diagnosis of acute gonorrheal urethritis having been made, clinically and microscopically, treatment should be begun immediately. There is nothing to be gained by waiting, and much may be lost. Every case should be treated on its merits, and considered as a problem sui generis. There can be no routine treatment applicable to all cases, for obvious reasons.

The treatment of acute gonorrhea must have two primary objects in view—namely, to destroy the gonococci that have lodged in the various portions of the genitourinary tract, and to restore the affected parts to their normal condition. Any method of treatment that does not accomplish these results should be discarded. We therefore are limited in our therapy to such measures and remedies as will destroy the etiologic factor of the disease without traumatizing the affected tissues.

One fact always should be borne in mind,—the intolerance of the inflamed urethra to heroic treatment. This fact renders most attempts to abort the disease futile, except in those rare instances in which the patient is seen within a few hours after the inflammation makes itself manifest; in other words, while the disease is limited to the fossa navicularis.

If we see the case very early—*i. e.,* within the first twenty-four hours of the appearance of symptoms—and if a rapid cure is demanded for domestic or business reasons, we are justified in attempting the abortive method; if the abortive period has passed, but the disease is still limited to the anterior urethra, we endeavor to prevent its extension to the deep urethra. If, however, the latter already is involved, our treatment should be directed along lines that will seek to limit the spread of the inflammation and prevent the development of complications.

Abortive Treatment.

The *abortive treatment* in particular should strive to destroy such bacteria as are present without injuring the mucous membrane. Silver nitrate has been for many years the favorite means of aborting gonorrhea. A very strong solution (gr. xv in ℥i of distilled water)

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is injected into the urethra and retained for a few seconds. This is followed by a neutralizing injection of a weak sodium chlorid solution, and the bladder is then emptied. Instead of this strong solution, a very weak solution (gr. ½ in ℥i) may be used every two or three hours for five or six injections. Both of these methods are painful, and often increase the inflammation instead of aborting it.

Another method quite commonly employed by those who believe in the efficacy of abortive methods, is as follows: The anterior urethra is thoroughly cleansed with a mild antiseptic solution, such as boric acid or weak permanganate of potassium; a short straight endoscopic tube is inserted for an inch or two into the urethra, and after its obturator has been removed, a solution of silver nitrate, 2% to 5%, is applied by means of a dripping cotton swab. In this manner only the first inch of the urethra is cauterized, leaving the rest of the canal untouched. The infected area is thus sterilized. The patient goes to bed for a few days, while the reaction is permitted to subside. Later on, a mild astringent solution, such as ½% zinc sulfate, may be required.

A very interesting and often effective method is that proposed by Ballenger, and known as the "sealing-in" method. During the first twenty-four hours of the infection, he injects into the urethra a 5% freshly prepared argyrol solution, which is retained or "sealed" in the urethra by closing the urinary meatus with collodion. The patient obviously voids urine as seldom as possible, so as to retain the solution as long as possible, and this is encouraged by reducing the normal intake of fluids to the minimum. The argyrol solution is retained at least six hours after sealing. The author says he has had excellent abortive results with this method, in thousands of cases. It is worth trying, since failure does not do the patient any possible harm. There is practically no reaction after the treatment.

Another rational and sometimes effective method consists in irrigating the anterior urethra, two or three times daily for a week or two, without a catheter, with a hot solution of silver nitrate (1-20,000), protargol (1-500), or potassium permanganate (1-4000).

When, however, the method selected for aborting the disease is not successful, as is often the case, we must resort to systematic treatment, always having in mind the axiom that the urethritis proper is by no means as serious a disease as its possible complications, and that the complications are very often the result of indiscreet and unscientific treatment.

SYSTEMATIC TREATMENT.

We may divide the subject of systematic treatment into three parts, *hygienic, internal* and *local.*

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Hygienic regulation of the patient's life is absolutely essential if a cure is hoped for, and applies with equal force to anterior and posterior urethritis. The patient should avoid unnecessary physical exertion, rest as much as possible, ride rather than walk, sit rather than stand, and avoid alcohol and spicy foods. The diet should be simple, with plenty of fluid, preferably plain water, between meals. It is a good rule to have the patient drink at least one glass of water every hour. The bowels should be kept open, and for this nothing is better than the familiar rhubarb and soda mixture. The patient should be instructed as to the contagiousness of the discharge, with special reference to the care of the eyes. All soiled dressings should be destroyed by burning, and the hands carefully washed with soap and water after handling the affected parts. Of course, sexual excitement and indulgence must be prohibited.

It is well to distribute to patients, printed instructions, the observance of which is necessary for their well-being. I use the following form:

GENERAL DIRECTIONS FOR PATIENTS SUFFERING WITH GONORRHEA.

You are suffering with a contagious disease. Therefore you must be careful to carry out orders exactly, in order that the danger to yourself may be as little as possible, and the infection of others prevented.

Complications develop very easily, during the course of this disease, particularly after sexual intercourse or sexual excitement, or after drinking beer, wine or liquors.

The absence of a profuse discharge does not mean that the infectious stage of the disease is past. Even in the watery discharge, or in the threads in the urine, the germs may live for a long time after all acute symptoms are gone, thus making it still possible for you to infect others. Therefore do not consider yourself cured until you are told so definitely, after careful examinations.

Should you, for any reason, have to remain away from treatment, go to some reputable physician, or dispensary, for treatment; tell the doctor the nature of your illness, and follow his instructions until he tells you that you are cured. Never consult "quacks" or doctors who advertise.

Do not resume sexual intercourse until you are told you are cured.

RULES TO BE OBSERVED.

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After each handling of the parts, wash the hands well with soap

and water, and dry them on a clean towel. Keep this towel for your exclusive use, if possible.

Do not touch or rub your eyes. The danger of infecting them is very great, and may lead to blindness.

Wash the diseased parts gently, morning and evening, with lukewarm water and soap, drying with a small piece of clean, soft linen or gauze. Burn the cloth after using. Sleep alone.

Apply a small dressing to protect your clothing from the discharge. Wear one of these constantly.

Take at least one warm, full bath a week, just before going to bed. Wear the protective dressing during the bath. After the bath, wash out the bath-tub with soap and water and dry it thoroughly.

Dress warmly; avoid draughts, exposure to cold or wet, and wet feet. Keep as quiet as your work allows. Keep the bowels open.

Do not take beer, wine, or liquor. Do not drink carbonated waters. Drink plenty of plain water, or milk. Coffee, or tea, in moderate quantity is not injurious.

Avoid spices, such as pepper, mustard, paprika, cloves, cinnamon, nutmeg, or foods containing them. Eat plain, light food.

Avoid the company of women. Sexual excitement brings on complications.

Come regularly for treatment, and carry out your treatment at home carefully and conscientiously.

The best dressing (if a foreskin is present) is a piece of gauze, about four inches square, with a hole cut in the center just large enough to admit the glans penis (Taylor). It is passed over the glans to the corona and the foreskin is pulled down over it, thereby holding it in place. This dressing has the advantage of holding all the discharges, while at the same time it does not act as a dam to the secretion. If there be no foreskin, the same result is attained by taking a piece of four-inch gauze bandage, eight inches long, and wrapping it around the penis so that at least two inches of the bandage protrudes beyond the glans. This is held in place by a rubber band or a piece of narrow bandage. The so-called "gonorrhea bags" are still better. The cotton gauze bags are better than the rubber bags. A proper suspensory should be worn, especially by those who do hard work. The penis never should be squeezed to bring forth a discharge, nor should pressure of any kind be made, either by tight clothing or otherwise. The patient should sleep alone, preferably on his side, and should avoid warm bed coverings. If the inflammation is severe the penis should be immersed several times a day in water as hot as can be borne. To this water may be added a little

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permanganate of potash or bichlorid of mercury. In any event the organ should be bathed several times daily, and the preputial cavity particularly kept clean to avoid irritation.

Internal treatment of uncomplicated acute urethritis aims to render the urine bland and sterile—antiseptic if possible—so that the act of urination not only may be accomplished with a minimum amount of pain, but, by virtue of the added qualities, help to cure the disease, either by actually destriying the gonococci or rendering the urethra unsuitable for their development and growth. For many years it was thought best to render the urine alkaline; even at the present day the practice is current with many practitioners. Within the past decade, however, there has developed a tendency to substitute for the familiar alkaline mixtures the so-called "urinary antiseptics" and modified balsamics. At least a few of these preparations have real value in the auxiliary treatment of gonorrhea; among these I include, from personal experience, methylene blue, helmitol, santyl, salol and gonosan.

Methylene blue, in doses of one grain, three or four times daily, constitutes in my experience, the most valuable adjunct to the local treatment. It may be given alone, or preferably in combination with four grains of boric acid. Without unduly exaggerating the value of the methylene blue and boric acid combination, I believe it exerts a specific influence in gonorrhea, having used it in thousands of cases with a growing respect for its efficacy. Helmitol (gr. vii) has given me more satisfaction in gonorrhea than urotropin or salol.

I believe urotropin has no value whatever in acute chronic gonorrhea. Santal oil or Lafayette mixture never should be used in the acute stage of gonorrhea. They seem to do more harm than good.

In a number of cases in which for one reason or another local treatment was impossible, the methylene blue and boric acid capsule has given most satisfactory results. The sole disadvantage of this combination is the tell-tale blue stain which persists during its employment. However, the results in my experience justify its use nevertheless.

Local Treatment: The aim of local treatment is to actually destroy the gonococci within the urethra, or what is equally effective and less dangerous to the mucosa, to merely render the urethral canal an unsuitable medium for their growth and thus destroy them by the process of starvation, so to speak.

It probably is the consensus of opinion that any preparation that has the power of destroying gonococci within the urethra, likewise has the power of inflicting more or less damage to the urethral mucosa. Such remedies should be avoided. The human urethra is

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not a test tube. Nature must be given a chance to rid the canal of the etiologic factor and the inflammatory products of the disease; this policy is best applied by a conservative treatment, one that constantly aims to encourage the natural tendency of the inflammation to limit itself. Having this policy in mind, any and all local treatment that causes pain or irritation is to be avoided, on the ground that it will do more harm than good.

There are two methods of local treatment for acute anterior urethritis that have stood the test of time. The first consists of local applications of silver salts to the canal by a small glass syringe, at frequent intervals. The second is the Janet method of irrigating the urethral canal with hot permanganate solution under hydrostatic pressure. The use of astringents in the acute stage has properly been abandoned. The irrigation (Janet) method is not as popular to-day as it was twenty years ago, and it is quite likely that with the better understanding of the merits of the silver salts, the method will pass into oblivion, though these hydrostatic irrigations have much to commend them.

The purely mechanical value of hot antiseptic fluid in large quantity flowing in and out of the inflamed urethra cannot be gainsaid, but the method is open to two serious objections,—the possibility of irritation and trauma caused by the pressure of this volume of water against the inflamed mucosa, and the danger of converting an uncomplicated anterior urethritis into a posterior urethritis with its subsequent complications, by carrying the infection into the deeper parts of the canal. While these contingencies may be considered remote in the hands of experts, it should be remembered that the general practitioner usually is the first to see the patient with acute gonorrhea, and he is not apt to be expert in the administration of these irrigations.

How many cases of epididymitis and prostatitis owe their being to the faulty use of irrigations, none can say, but the number is very great. It must be admitted, however, that in the hands of men who can be trusted, as a result of experience, this column of hot water threading its way *gently* into the urethra is capable of cutting short a virulent attack of gonorrhea, but in the hands of the inexperienced or careless, this fluid is potentially dangerous and a menace to the patient's welfare. It is therefore questionable whether such a method, with its obvious dangers and risks, should be used as a routine procedure when the same, if not better results, can be attained without running the risks of extensions and complications, by a judicious use of the silver salts; it must be conceded, however, that the latter method of treatment does not present the spectacular appearance to the patient that the irrigation method does. Those who practice this treatment advocate its employment daily, or twice daily

preferably, copiously flushing out the urethra under hydrostatic pressure. There is much truth in the charge that these irrigations actually cut short the acute stage, but tend to prolong the terminal stage, the result being a tendency to the development of chronic catarrhal conditions.

It may be mentioned in passing, that the irrigation treatment in non-specific urethritis stands unsurpassed. A few daily irrigations usually will suffice to cut short the attack and bring about a complete cure.

The most successful and dependable method of treating acute anterior urethritis, in my experience, is a combination of the internal use of the urinary antiseptics above-mentioned, with the local employment of the silver salts. In the average case, if it has not been permitted to become too severe and virulent, very satisfactory results will be had if these salts are used properly.

Their introduction has constituted a distinct advance in the treatment of specific urethritis; when used intelligently, the inflammation is reduced almost immediately, pain and burning disappear, the discharge diminishes, and in the vast majority of cases the inflammatory process is restricted to the anterior urethra. This has been my personal experience in innumerable cases.

Local treatment should be instituted at the earliest moment. The earlier the treatment is begun the better result can we expect. The solutions must be made fresh every day. It is inadvisable to give the patient more than one, sometimes two, injections daily, and the weaker the solution, in the beginning, at least, the better the result. This is quite contrary to the usual teaching, but the results have justified this view in my practice. Very seldom have I seen satisfactory results with the early use of strong solutions such as 10% to 20% argyrol or 1% to 2% protargol. Nevertheless such strengths are being used quite extensively.

Usually I begin with a 3% solution of argyrol or a ¼% of protargol, using it once daily; if the discharge is annoying, I use a second injection in the evening. These are retained ten to fifteen minutes,—the longer the better, the patient resting on a table on his back.

Under these weak solutions the pain quickly ceases, the discharge is kept under control and gradually disappears, and extensions to the posterior urethra are reduced to a minimum. Gradually, yet slowly, I increase the strength of the solution, always studying the urine for the effect that the remedy is producing. If the urine continues to come out cloudy and full of pus, the strength of the solution is diminished; if it begins to clear up it is increased. This is done on the

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theory that the more virulent the inflammation in the canal the less powerful and irritant is the remedy to be applied. I prefer to give the injections myself or have them made by a trained assistant. I rarely allow the patient to do this at home, because a faulty injection often brings on extensions and complications, and few patients know how to inject themselves properly. If at the end of the third or fourth week the treatment has progressed successfully, the urine will be clear and show a few shreds, there will be no pain and a slight watery discharge, which may or may not contain gonococci.

It goes without saying, that the discharge is repeatedly examined for gonococci, and the treatment will depend largely on the microscopic findings. Persistence of the gonococci demands an increased strength of the local injections, or their more frequent administration.

In any event, the balsamics are indicated in this stage of the disease. Either santal oil, ten minims, or Lafayette Mixture, two drachms, three times daily, will be found useful. Some of the proprietary santal oil preparations are more easily borne, and less irritating to the gastro-intestinal tract. Among these, the most efficient, I believe, as gonosan, santyl and arheol. Their comparative expensiveness is their most serious drawback.

If the case has progressed satisfactorily, without extension to the posterior urethra or other complications, and the urine is quite clear except for the presence of shreds, an astringent injection is substituted for the silver solution. In a well-treated case, there is at this time no discharge and no pain, and only a few shreds in the urine are to be seen. Zinc sulfate (½ per cent.) or zinc sulfo-carbolate (1 per cent.), or bismuth subnitrate (10 per cent.) are apparently equally effective. These are continued for two or three weeks, and we find at the end of six or eight weeks, a clear urine, a healthy mucous membrane, and an absence of gonococci, even after the usual tests. It is quite unusual for a case of acute urethritis, if seen early in its course and treated by this method, to extend to the posterior urethra; the second urine remains clear throughout, the first urine clears up quickly and gonococci disappear within a few weeks. Pain is usually absent or very slight, and likewise the discharge. The patients feel well and do not realize that they are sick unless they stop treatment for a few days, when a recurrence of the discharge surprises them.

Quite recently a number of new preparations have been introduced, some of which have attained considerable vogue; but they have not yet withstood the test of time and are still in the experimental stage. Nevertheless they have distinct merit in certain cases, and should ever be borne in mind when the silver salts or the irrigations of permanganate are not giving satisfactory results. The most noted of these is acriflavine, a dye, chemically 3-6-diamino-10-methyl

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acridinium chloride. It is a brownish red, odorless, crystalline powder, soluble in two parts of water, less so in alcohol, forming dark yellow solutions which flouresce strongly on dilution and which have a bitter taste. It is quite soluble in ether, chloroform, liquid petrolatum, fixed and volatile oils. Proflavine, -3-6-diamino-acridine sulphate, is less irritating and less toxic, and preferred by some.

Notwithstanding the warning that patients are not to be trusted to administer acriflavine injections to themselves, the method of choice recommended in acute anterior urethritis is a bladder irrigation with 500 cc. of 1 to 1500 solution every second day. At the same time it is advised that concurrent hypodermic injections of a gonococcus antigen (bacterial vaccine) be given. The patient is encouraged to retain the fluid in his bladder as long as possible. In these cases, Acriflavine or Proflavine (1 pint daily of 1:1000 solution) should also be given by mouth to obtain a constitutional effect as well.

There is a rapidly-growing literature on the value of these preparations in the treatment of gonorrhea, but opinions are far from unanimous. In my personal experience they have not been found the superior of the silver preparations in the average case, and in some respects they have decided disadvantages. Besides, they are apt to be extremely painful, even in patients who stand argyrol and protargol without complaint. On the other hand, acriflavine often does stop a gonorrheal discharge within a few days. It is quite possible that future experience in the technical use of these preparations and further improvements in their manufacture, may demonstrate more fully their great value in acute gonorrheal urethritis, but for the present they should be used cautiously.

Another recent preparation, about which the same may be said, is Mercurochrome-220. This being a comparatively new and untried method, there is not sufficient clinical evidence at hand to justify its acceptance as a regularly established method of treatment, though it is being given an extensive trial. Its eventual place in our therapy for acute urethitis, is still *sub judice*.

II. The Treatment of Specific Urethritis, Posterior

It is possibly true that every case of acute gonorrhea in the male extends by contiguity to the posterior urethra; it is certainly true that a goodly number of such cases give no symptoms or evidences of posterior involvment, either subjectively or objectively, at any time, during the acute or sub-acute stages. These cases we are justified in designating as *anterior;* those, however, in which the process has manifestly extended to the deeper part of the urethra and is making its presence apparent by "posterior" or "bladder" symptoms we designate for clinical purposes as *posterior*.

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In the matter of therapy, posterior urethritis assumes a far more serious aspect than the anterior type of the disease. A severe posterior urethritis is the precursor of all the complications to which the disease is liable. Therefore, it follows that the avoidance of complications lies in treating the posterior urethritis in such a manner as to prevent further extension of the inflammation to other parts of the urogenital tract.

Success in the treatment of uncomplicated acute posterior urethritis is to be had only as the result of a distinct conservatism, having reference to the immense possibilities for mischief inherent in any other form of treatment. A cure should not be hurried or forced; it is better to help nature than to retard it by unduly heroic measures. The usual rules of hygiene as regards local cleanliness, abstinence from sexual and alcoholic stimulation and regulation of the diet, are to be observed even more vigorously than previously. Particular attention must be paid to the free and easy movement of the bowels daily. Violent exercise is to be prohibited, and the testes carefully supported so as to avoid sudden jarring.

INTERNAL TREATMENT.

In the average case the internal treatment of uncomplicated acute posterior urethritis should not differ radically from that employed before the deeper parts became involved. In cases with well-marked symptoms, however, the treatment should be purely symptomatic. Usually the most prominent symptoms are those of vesical irritability due to the bladder-neck inflammation and painful erections. For the bladder irritability the best remedy at our command is the use of various alkaline salts of potassium or sodium, principally the acetate, citrate and bicarbonate, in doses of ten to thirty grains; to this may be added ten minums of the tincture of hyoscyamus, or if the tenesmus and spasm be very marked, a similar amount of tincture of belladonna. Thus:

℞ Potassii or sodium citrat., or
Potassii sodium acetat., or
Potassii or bicarbonat ℥ss

Or:

—℥iss
Tr. hyoscyami, or
Tr. belladonnæ (or both), ℥ss
Syrup cinnamomi, ad, ℥iii M.
Sig. One teaspoonful 4 times daily in water.

℞ Potassii citrat., ℥ss
Ol. gaultheriæ, or
Ol. eucalypti, ℥ss
Syrupi acaciæ, q.s. a.d., ℥iii M.
Sig. One teaspoonful 4 times daily. (Shake well.)

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In the later stages santal oil, ℥ss, may be added or substituted for one of the oils in this emulsion.

Plenty of plain water is of course a *sine qua non* in this condition. The practice of making the patient drink a glass of water every hour is a very good one.

If painful erections occur, the internal administration of camphor monobromate, 2 to 5 grains, in pill or emulsion, will often be of distinct value; likewise lupulin, 15 to 30 grains, or its fluid extract, 15 to 30 minims, taken at bedtime. The mixed bromides are also very useful. In brief, the symptoms should be combated as they arise.

Hydrotherapy.—In addition to the internal administration of drugs, we have valuable adjuvants in the local application of hot and cold water. Immersing the penis in very hot water during micturition will very often diminish the pain perceptibly; and if the organ is bathed and kept immersed in hot water for a time before retiring, painful erections (cholɗee) may be avoided. A hot sitz bath taken before retiring usually affords considerable relief to the patient who has more or less severe posterior symptoms, especially with considerable prostatic involvment. The bath is preferably made of brief duration (ten minutes) and repeated as often as desired. The water should be as hot as can comfortably be borne, beginning with about 100 degress F., and adding hot water gradually up to the highest point of toleration.

A warm rectal irrigation, given with a recurrent rectal tube is very soothing to the inflamed prostate, and affords considerable relief. These irrigations may be given with advantage in the morning and at night, and serve the double purpose of allaying tenderness in the prostate and cleaning the lower bowel at the same time. I have found them very useful as a routine adjuvant to treatment.

In many posterior cases, erections cause considerable annoyance because of their frequency and the more or less severe pain accompanying them. They are best relieved by the application of cold water, or the ice-bag. With the more intelligent methods applied nowadays to the treatment of posterior urethritis, chordee, urinary tenesmus and urgency are comparatively uncommon, though they are frequently encountered in dispensary patients who have been careless and irregular in their habits and methods of living.

Local Treatment.

Many authors advocate a complete cessation of all local treatment as soon as there are visible signs of posterior involvment. Experience certainly offers justification for this attitude, particularly

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since the vigorous local treatment so often administered is itself usually responsible for the extension to the posterior urethra. In the latter type of cases it is sometimes very striking to observe the wonderful improvement that immediately follows the cessation of all local treatment. This is particularly true when the treatment has been given with more vigor than discretion, as, for example, bi-daily irrigations by the Janet irrigation method, using strong solutions and a generous hydrostatic pressure. In such cases, when the irrigations are stopped entirely, and the patient is given a mild urinary sedative, though the urethral discharge may appear at the meatus, the vesical and prostatic symptoms cease almost instantly. The same is true when strong injections of the silver salts have been employed. If we could properly interpret what we see and what the patient feels, we should regard his pains, his chordee, and his frequent painful urination as a mute protest by nature against the excessive treatment to which he is being subjected. Cessation of all local treatment therefore should be thought of as a primary indication in every case that seems to be suffering from *too much treatment.*

When, however, the remedies employed in the local treatment have been used with due conservation, both as to strength and frequency of administration, as above recommended, it will be found that the posterior involvment, when it does occur, rarely if ever brings with it the painful and alarming symptoms that were so commonly seen under the old methods of treatment. The only evidence of the extension to the deep urethra are seen in the increased urinary frequency and the cloudy second glass of urine voided by the patient; in many instances the patient does not realize that any extension of the inflammation has occurred.

It is safe to say that the involvment of the deep urethra does not necessary contraindicate the further use of local measures. On the contrary, most admirable and satisfactory results follow the proper use of local therapy in acute posterior urethritis.

The most popular method of local treatment consists of irrigations with large quantities of hot antiseptic fluid. These irrigations may be administered in three ways: (1) By hydrostatic pressure; (2) by the large Charlton syringe; or (3) by means of a catheter. In all these methods the object sought for is the introduction of a large quantity of warm medicated fluid into the bladder, which is then passed out by the patient per urethram.

When the Janet method and the large syringe are used, the entire urethra is irrigated twice—once when the fluid enters the bladder, and again when it is passed by the patient. When the catheter is used, the bladder can be filled and emptied per urethram but once, unless the catheter is again inserted.

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I do not, as a rule, irrigate the urethra in acute posterior urethritis, but when I do, prefer to use the Charlton syringe. Whatever advantages the Janet irrigation enjoys, can be attained equally well with the syringe, and its dangers are reduced to a minimum or even nil. The syringe holds about five ounces. A (Wheeler) rubber tip and shield, easily attached to the syringe, fits snugly into the meatus, and the rapidity of the flow, amount of pressure applied, and quantity of fluid injected, are absolutely under the control of the operator's hand. With the left hand holding the glans, and the right hand introducing the fluid into the bladder, every contraction and relaxation of the cut-off muscle is instantly appreciated, and the pressure of the hand on the piston is increased or relaxed as the conditions demand. I believe that this method of irrigation is so far superior in every way to that of Janet, as to justify its use wherever bladder irrigation is indicated.

The comfort of the patient and the efforts of the surgeon will be enhanced by the use of the author's genito-urinary basin. This basin is made of light sheet metal, and is so shaped as to rest on the thighs of the patient.

The catheter never should be used in acute urethritis as the method of choice. The introduction of a foreign body into the highly inflamed and tender urethra, not only is unsurgical, but absolutely unnecessary. It can be avoided, and therefore should be discarded. There are, however, rare instances, in which irrigation seems desirable, but, for one reason or other, neither the Janet irrigation nor the Charlton syringe can be employed with success. In such instances, the smallest possible calibered catheter might be used, but the utmost gentleness should characterize its insertion and removal.

Generally speaking, the irrigation method is very effective in acute deep urethritis. There can be no denying the valuable effect of thoroughly flushing the urethral canal with hot fluid. Occasionally the results are very striking. It seems marvelous how a few irrigations, properly administered, will diminish the discharge, relieve the pain and clear the urine of pus and bacteria; but this happy picture is so often marred by exceptions, that one's faith in the value of irrigations as a routine method of treatment is sorely tried. Complications occur quite frequently under the irrigation treatment, and they are often directly due to the irrigation itself. Epididymitis is the most frequent of these complications. True, epididymitis likewise occurs under any form of treatment and even more frequently, without any treatment whatever; but I am quite convinced that fully 60 to 75 per cent. of patients with epididymitis were previously treated by the hydrostatic method. Possibly these complications

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would have arisen under other forms of treatment; possibly the irrigation technic was faulty.

When, therefore, it is possible by other and less dangerous measures to secure equally good if not better results, it would seem advisable to discard the irrigation method as a routine treatment, but to hold it in reserve for such cases as seem to be especially adapted to its use.

My personal preference is to use the silver salts in the strengths previously mentioned—argyrol 2½ per cent., or protargol ¼ per cent. If the posterior urethra becomes involved, the treatment is continued as before, without any change whatever. The solutions are employed as in anterior urethritis (previously described), on the theory that the posterior inflammation can with safety be left to itself. A good rule to observe, in the average case, is to watch the anterior urethra and the posterior urethra will take care of itself.

In exceptional cases, however, it is advisable to bring some of the solution into contact with the deep urethra. This can be done in one of three ways—first, by carefully injecting a second syringeful into the already distended urethra and thereby gently driving the excess into the posterior urethra; second, by massaging the filled urethra; third, by injecting the contents of a syringe holding ten or twelve drams. I prefer the last method. Massage is performed as follows:

The anterior urethra is slowly and gently filled with the solution, and the head of the glans seized with the thumb and index finger of the left hand. The penis is then put on the stretch and the index finger of the right hand is brought into contact with the lower surface, so as to gently, yet forcibly, drive some of the fluid back into the deep urethra. The penis is thus "massaged" about a dozen times, slowly and carefully, and the patient then takes hold of the glans and holds it about ten minutes. When the patient lets go, it will be found that fully three-quarters of the syringeful have passed into the deep urethra, as only a small amount of the fluid escapes when the hold is relaxed. In this manner, without risk or pain to the patient, the medication is applied to the posterior urethra.

Others deposit the solution into the deep urethra by the use of a rubber catheter. Their method is to inject the anterior urethra first, the patient holds the fluid for ten or fifteen minutes, by grasping the lips of the meatus firmly, and the fluid is then permitted to escape. A sterilized catheter is next inserted into the urethra, the eye resting in the posterior portion of the canal. A syringeful of the solution is then deposited in the canal and the catheter withdrawn. The introduction of the catheter, even for so worthy a purpose as the instillation of the fluid into the deep urethra, is not to be recommended,

particularly since the same end can be attained without its employment. Moreover, epididymitis and severe urethro-cystitis are not infrequent complications of this procedure.

Throughout the course of the treatment, a watchful eye should be kept on the prostate and the seminal vesicles. An examination should be made at least once a week. Likewise the slightest intimation by the patient of a feeling of dull pain or uneasiness in the scrotum, demands a careful examination of the epididymes. This watchfulness very often will prevent the development of complications. Should they arise, however, in spite of our watchfulness, they should be treated without delay, in the hope that the attendant damage will be minimized. At the same time, the results of treatment as affecting the urethritis proper also should be observed. If the symptoms continue to increase, if the urine contains more instead of less pus, and if the prostate shows evidences of serious inflammation, it is well to stop all local treatment for a while and note the result. It is also well sometimes, in these circumstances, to still further reduce the strength of the silver solution, or, at other times, resort to bladder irrigations. There can be no fixed rules on this phase of the subject; one must be guided by his experience and judgment.

If the treatment is successful, it will be found that the prostate and vesicles remain but slightly congested, the epididymes are uninvolved, the urethral discharge gradually ceases, the pains and erections disappear, and the urine when passed into two glasses, is clear, with shreds in the first glass, the second urine being clear. The reading of the two glasses should not be misinterpreted. Suitable investigation will show that the anterior portion is practically well, but that the pus or shreds come from the posterior urethra. In other words, the posterior urethritis is still there, even though its former acute symptoms are gone. Therefore, at the end of the fourth or fifth week of the disease, with a clear second urine, we are ready to change our treatment to meet the new conditions—namely, a subacute posterior urethritis, associated in all probability with a congestion of the prostate, and both possessed of an inherent tendency to become chronic. This last feature should not be lost sight of. It is the keynote to the prophylaxis of chronic gonorrhea.

If the use of mercurochrome-220 is preferred to the silver salts, it should be preceded by an irrigation of warm sterile water or normal saline solution to remove mucus and pus and thus insure a clean surface. Potassium permanganate or other oxidizing substances should not be used.

In the declining stage of posterior urethritis (uncomplicated) the best results are attained by the gradual introduction of deep instillations of silver nitrate. One should be careful not to make this change too early, nor should the solution employed be too strong.

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I begin with 1-300, given about twice weekly, alternating with the silver salt or no treatment whatever on the other days, always feeling the way, as it were, watching the reaction, and gradually increasing the strength to 1 per cent., and occasionally to 2 per cent. Meanwhile the prostate is gently massaged once every four or five days, and the massaged secretion carefully examined for pus and gonococci. The massage is always preceded or followed by a bladder irrigation or a massaged injection into the deep urethra, as described above. It is sometimes advisable to instil a little silver nitrate (1-200) into the deep urethra, after the patient removes the massaged secretion by voiding.

If there is much mucus in the urine, and if this mucus by proper tests ,is known to come from the anterior urethra, an astringent, preferably zinc sulfate, ½ per cent., may be substituted for the silver salt.

Santyl oil and its more elegant derivatives are of considerable value at this stage.

STUDIES IN SEXOLOGY

WHAT IS FEMININE LOVE?

By the Rev. Arthur E. Whatham

In our article on "The Social Evil" (A. J. U., July, 1917, p. 309), we quoted the scientific statement of Letourneau, that "human love is essentially rut in an intelligent being" (The Evolution of Marriage, p. 9), confirming it by further quoting from Geddes and Thomson (The Evolution of Sex, p. 250), that "no one can be foolish enough deliberately to ignore the sexual or physical basis of love" (p. 296).

Notwithstanding, however, the truth of Letourneau's statement, we did not hesitate to affirm that with the normal woman, meaning here a truly *human* woman, "It is love psychic and not physical" that she chiefly desires, while with the normal man, refined or unrefined, it is the very reverse of this. The point we were attempting to prove in simple language was, that the normal woman was much less erotic than the normal man. In a later article published in the same Journal (July, 1918) we again attempted with further elaboration to prove this statement, and with more elaboration still in a subsequent article, published in MEDICAL LIFE (April, 1921) and entitled, "Eroticism in Women." The necessity for this repetition springs from the fact that not only is the problem we have set ourselves to solve of peculiar difficulty owing to the complicated character of the evidence at hand, but that articles are still being written in which the position is taken that for the ordinary woman's complete health

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and full satisfaction in the sexual congress, the orgasm, or purely physical act is a factor as indispensable in the case of the woman as it is in the case of the man.

Thus Sperry assumes, "that the female organs would suffer from want of contact with the semen of the male," and Furbringer and Kossmann that "interrupted intercourse is unfavorable," the latter warning "against the risk of inducing nervous conditions to the wife by preventing the completion of orgasm" (Northcote—Christianity and Sex Problems, p. 119f).

To this last statement two complete answers may be given covering the other two immediately preceding statements. First, the members of the Oneida Community long practised sexual intercourse, successfully avoiding the orgasm and, consequently, the discharge of semen by the male, both participants in such practices always enjoying full health and complete satisfaction. Second, Northcote assumes the existence of an ideal state "in which the human soul filled with sexual love may rise above, may become in some measure detached from, carnal excitement," and he does not hesitate to affirm that the "love of woman" had risen to this state in the course of evolution "two or three thousand years ago." At the same time he does not hesitate to warn us that "The idea of marriage as a purely spiritual bond without any carnal connection does not seem, in the circumstances of this present life of ours, a healthy or acceptable one." (ib. p. 225f).

Now the last piece of evidence is no more a mere matter of sentiment than the first, which may be taken as full and sufficient scientific evidence derived from warrantable and prolonged experience. Consequently, when Dr. Storer refers to the "instinctive yearning for the other sex, and its gratification in the excitement of coitus," he merely emphasizes what we know to be facts, but when, in referring to these two as of "no little import," he includes "the culmination of sexual congress in effectual impregnation," we are bound to view this last as not necessarily to be included with the first two in order to insure their complete hygienic satisfaction.

Indeed, these will often cause considerable mental and physical distress if the last should be included. This Dr. Laycock is certainly incorrect when stating that in human sexual congress with regard to the woman "her body and her whole nervous system are often distressed by imperfect, or even passive complicity" (AJU, July, 1920, pp. 156, 156). We can, of course, fully understand this to be so when the woman is

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robbed, as it were, of the ordinary completion of a coitus by a husband who takes no pains to consult the feelings of his wife in the marital relationship, but when there is a full understanding between them, each desirous of acting for the benefit of the other, there could here be no more injury or inconvenience following an intercourse than in the case of such practice in the Oneida Community.

On the contrary, the mere congress without completion of the act of entrance would afford much more satisfaction mentally and physically to both than had it been otherwise. Of this we are made doubly sure when we recall the remark of Northcote touching the "love of woman" having more than two thousand years ago risen above and detached itself from purely carnal excitement in an act of wedded love. It may, of course, at once be suggested that the resorting to the Oneida method of congress is in itself a matter of complete carnal instinct. This, however, we are fully prepared to deny on the ground that there is no more mere carnality here than in a kiss or an embrace. Carnality there is of course, but as we have said, no mere carnality, for just as in a kiss or an embrace there may be much more psychic than physical ecstasy, though both originate in a physical instinct, so in a sexual congress without its usual completion, it is quite possible that there may be much more psychic than physical ecstasy, an ecstasy in this case which might well be termed spiritual.

Of course, beautiful as the above idea of marital intercourse might be called, and we believe that it will be conceded that it is beautiful, it may nevertheless be suggested that if offspring should be warrantably undesirable, intercourse even by the method suggested should be absolutely avoided, otherwise the pair practising such method would be living in a gross carnal state. Now this argument might hold if marital intercourse was solely a reproductive act, but it is not even chiefly this, for primarily it is a "love act." As Northcote truly says, "The act itself and its surrounding emotions stimulate within the organism the powerful movements of a vast psychic life" (ib. p. 77).

Now what is a "love act?" It is the exercise of the desire to possess, to come into contact with, to absorb another into one's self. It is the exercise of the appetite of hunger, which was prior, even, to the appetite of sex, an original form of hunger, although now differentiated into a distinct appetite.

When an infant, clutching an object, immediately endeavors to put it to its mouth, we see the exercise of the

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primordial instinct in the highest forms of life. We see the beginning of sex, the origin of the law of expansion by means of assimilation, in other words, by the exercise of the appetite of hunger. We can now understand the origin of one of the most widely spread manifestations of strong sexual emotion, especially in women, the tendency to bite (The Psychology of Sex, Vol. III, p. 71). The writer from whom we quote, Havelock Ellis, refers to a remark often made by Sicilian women when cuddling their babies, "How sweet you are! I will bite you," a similar remark often being made by many other women when cuddling their babies—"You sweet pet, I could eat you." We have here, of course, merely the expression of a subconscious desire whose origin goes back into the dim ages which first saw the evolution of the rudimentary beginnings of the highest forms of life.

To the Sexual Psychologist the "love-bite," the origin of kissing, is one of the most familiar of the now non-essential manifestations of the desire for sexual union. In studying the origin of kissing we can now, consequently, see why the "love bite" is a trait of love much more manifested by women than by men, for the simple reason that kissing itself, the present form of the love bite, is more practised by women than by men, although it is true that many men still indulge in it, kissing frequently either sex, although the female sex most enjoyably.

The "love bite" is merely the adult form of the child's desire to put everything into its mouth, which, again, as we have seen, is the outcome of the law of expansion by means of assimilation, or, as we said, of the exercise of the appetite of hunger. When the maiden says of her lover, "Let him kiss me with the kisses of his mouth, for thy love is better than wine" (S. of S., 1.2), we have here a reference to a well known and widely extended act practised in the sexual embrace—that of pressing lips on lips with the frequent insertion of the tongue. This is confirmed by the further statements in the same song, "His mouth is most sweet—like the best wine" (5.16; 7.9).

From what we have just said we can easily see that when Havelock Ellis says, "The complete mutual satisfaction, physical and psychic, of mother and child, in the transfer from one to the other of a precious organized fluid, is the one true physiological analogy in the relationship of a man and a woman at the climax of the sexual act" (ib. p. 15), he seems for the moment to have forgotten this intensified form of the

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This last is not a sex-perversion, neither is this particular "love kiss," itself a refined and much more pleasant form of the "love bite."

form of the kiss, any more, indeed, than is the simple kiss itself, for all three equally have their origin in the instinct to eat for self-preservation and expansion, otherwise reproduction. The "love bite" is, of course, an inherited desire which may well be eliminated entirely, for the enjoyment of pain given or received in sexual intercourse is decidedly a sex-perversion. As for the kiss in its simple or intensified form, it may well be left to the discretion of the persons concerned, together with the practice of the Oneida method in marital relationship. Indeed, this method needs warm advocacy, for not only is it as free from all intensified carnality as the completed sexual act itself, but it is a form of the "love act" intensely gratifying and highly hygienic while entirely free from the anxiety of reproduction when such a result would be a calamity.

Now it is with these two points, the gratifying and hygienic character of the Oneida method of sexual congress that we are here chiefly concerned, especially as it has to do with the woman in the case. Is this method for her what we have asserted, gratifying and hygienic? We have seen that eminent medical men who are equally well known for their insight into sexual psychology assert that in sexual congress it is as essential for the woman as it is for the man to experience an orgasm. We have, however, already seen from the well established experience of the Oneida Community that not only is it unnecessary for the man's satisfaction in sexual congress to achieve an orgasm, but that it is similarly so in the case of the woman, while in either case this elimination produces no physical injury. This being so, it is now time to produce further evidence showing that with the woman, when all is said and done, there is much less likelihood of her being injured by not experiencing an orgasm in sexual congress than in the case of the man, with whom there is little or no danger of this event.

When a recent writer states, that "it would be unnatural for a normally developed woman to have the same headstrong passion for actaul physical contact as the normal man," he merely states what we have in this series of articles on "Woman and the Act of Sexual Congress" been asserting under various headings of a careful analysis of woman's sexual impulse.

He has not, however, we venture to think, expressed him-

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self as clearly on the point at issue as we have done, indeed, it would seem that here he is somewhat astray. We have contended that the orgasmic culmination of the act of coition is not essential for the woman's health in sexual congress; that she does not seek it as the man seeks it; and that she may be as fully satisfied without it as though she experienced it. The said writer, however, by his repeated emphasis on "male continence," added to his statement that it is the duty of the man to see that in sexual congress "the woman should get from it her fair share of delight—as much pleasure, in fact, as the act is susceptible of," evidently views the woman in such congress as achieving her orgasm, while that of the man is to be eliminated.

With this one-sided ecstasy of pleasure Havelock Ellis seems to agree, indeed, it would seem to be the method adopted in the Oneida practice of sexual congress (ib. p. 187f). We are of opinion, however, as already expressed, that not only is it absolutely unnecessary for full health and complete satisfaction in sexual congress that the woman should achieve an orgasm, but that the idea of any such one-sided ecstasy would entirely destroy mutual spiritual love in such an act and soon cause its complete discontinuance.

We think it may be taken as granted that the dominant feeling in the love of a woman for a man is the desire to give him pleasure by the possession of herself through whom alone he achieves his intensest delight. It is this thought which permeates Solomon's "Song of Songs," crystalized in the words of the maiden, "I am my beloved's, and his desire is toward me." And again, when after the lover calling his maiden "a fountain of gardens," she bids him to "come into his garden and eat his precious fruits" (3.15, 16; 7.10).

We have already referred to Northcote's statement that in the normal woman spiritualized sexual love has already risen to a height where it is no longer dominated by mere physical desire. Believing this to be a fact we at once see that it conclusively shows the error of the idea that in sexual congress the normal woman will remain dissatisfied unless she achieves an orgasm. Indeed, we are prepared to assert that women possessing any real ethical culture would be emphatically dissatisfied with a method of sexual congress by which they alone achieved the maximum of physical pleasure such contact was able to afford.

A conspicuous trait of the normal woman is her unselfish attitude towards her husband or lover, and this being so, the normal woman as a whole would never consent to the con-

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tinuance of a practice in which she alone derived the fullest delight, a delight in which her partner refrained from sharing solely for her benefit. Indeed, were it possible that she should consent, such action would at once kill her spiritual growth in the sexual act. With her, however, there has been such a growth, a point in itself which shows that with the normal woman the fact that in the marital act she has not usually achieved an orgasm has been regarded by her with no very great concern.

It is now time for us to turn to the question why in the normal woman the orgasm "tends to occur more slowly than in men." There can be but one answer, which is, that women possess much less sensibility in the sexual region than men, a sensibility lacking to so great a degree that in very many parts of the world, civilized and uncivilized, various appliances, fixed in or around the penis, have been in use not only to heighten the woman's enjoyment in coitus, but to ensure her any pleasure whatever at the contact (Haverlock Ellis, ib. p. 82).

Here is a provision of nature which has enabled the woman to reach that height of spirituality in coitus to which we have referred. But there is another physical fact, the sexual apparatus of a woman bears a much larger proportion to her whole physical nature than that of a man to his physical nature, consequently her thoughts and desires are not as the man's centered upon one objective, the attainment of erotic pleasure. With a woman "the erotic thought is instantly diverted into a thousand channels—all the sentimental passages that precede the love relation, all the maternal pleasures that may possibly follow after."

"Woman possesses a divine happiness in pouring out herself and her gifts upon the beloved, and, like her cave ancestress, she will hold out her hands to the strong." This, of course, is true, but it is only that she may procure for herself, for her very own unshared by any other, a man. Says another lady writer, "What every woman wants more than anything else in the world is absolute dominion over one man." The dominion meant here is not the recognition of an arbitrary and autocratic authority, that is, it is not usually this, although there are not lacking instances of this dominion on the part of women. No, what the normal woman wants is the voluntarily given admiration to the point of worship by one whom she feels to be stronger than herself, and who could deprive her of this admiration were it not for the subtlety of

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her personal charms, physical and mental, by which she keeps her husband or lover her willing server.

Of course, these traits on the part of the woman are the outcome of her sex instinct, the manifestation of which, as we have described them, is what we call love. This sex attraction has been described by the Greeks as being the outcome of Hephæstus dividing the first human being, who was bisexual, into two, each half, respectively a perfect man and woman, henceforth ever yearning to become reunited into one whole: There can be no doubt that such a desire exists, although a modern scientist explains its origin differently.

This origin lies, as we have already stated, in the instinct of hunger possessed by the primordial forms of higher life. The result of this hunger is the absorbing into oneself the body of another, with the reproduction by the absorber of the body absorbed. Havelock Ellis quotes Landor as recording that while sojourning with the "Hairy Ainu," with a native girl to whom evidently he had become attached, "Loving and biting went together with her. She could not do the one without doing the other. As we sat on a stone in the twilight she began by gently biting my fingers without hurting me, as affectionate dogs do to their masters. She then bit my arm, then my shoulders, and when she had worked herself up into a passion she put her arms around my neck and bit my cheeks. . . . Kissing apparently was unknown to her" (ib. p. 72).

The evidence just produced is, of course, merely a confirmation of what we said with regard to kissing being a modified form of the "love bite." It will also be recalled that we said that women were more given to kissing than men, and we instanced the desire on the part of the maiden in the "Song of Songs," to kiss, and to be kissed by, her lover.

Kissing as a feature in nature-worship is well known to the student of Phallicism. It is intimated in I K. 19.18, that the phallic pillar of Baal was kissed by the Israelites, and the phallic pillar discovered erect by Macalister when exploring the ancient Gezer, had been kissed smooth on the top by its devotees.

Recently in a libel case in England in which there had been much mention of kissing, the Judge, Mr. Justice Darling, referred to the remarks of Erasmus on the then practice of kissing in England. The next day a learned counsel quoted the passage:

There are maidens here beautiful as goddesses, of a disposition both charming and yielding, and such as you would infinitely prefer to your

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Muses. Moreover, they have a custom that has never received the praise it merits; if you go anywhere you will be welcomed with kisses from all of them; if you have occasion to leave any place they speed you on your way with kisses. You kiss and are kissed. Does one of them come to see you, delicious attentions are forthcoming! Does one go away from you, an interchange of kisses is the rule. If you meet one somewhere else, you kiss your fill. In short, wherever you go, all is sheer delight.—*Over-Seas Daily Mail,* March 19, 1921.

From all this evidence we readily see that the kiss and the "love bite" have the same origin, both being the outcome of the sex instinct. We also see further evidence that kissing is more sought after by women than by men as an unconscious invitation to sexual union, an invitation, however, which, even as an unconscious desire, is much less looking for pleasure than to give pleasure.

From all that we have said we can now see that feminine love while manifesting an intense desire for sexual congress is infinitely less erotic than the same desire manifested by male love, for woman does not experience sexual desire from the same physical cause, the immediate tumescence of the organs of generation, operating in man.

With the normal woman the tumescence of the clitoris and the womb usually takes place some time after the commencement of the sexual act, frequently not at all. With the man the tumescence of the penis and seminal vesicles takes place before coition. This is why the normal woman does not as fiercely desire sexual contact from the purely erotic standpoint as the normal man, and why she, much more than the man, is able to spiritualize sexuality.

It is not because she is less of an animal than the man, but that some of her animal functions have been considerably blunted in the natural course of evolution, simply because they were not required for purposes of reproduction. But while all this is true it must not be supposed that the woman does not take as much pleasure in sexual congress as the man. Indeed, it would seem that she takes even greater pleasure, but more from a psychic than from a physical cause, although she is not without considerable physical pleasure as well.

Finally it must be borne in mind that in marriage sexual congress with no further exercise beyond intromission is as essential for complete happiness for the man and the woman, especially for the woman, as an orgasm on the part of the man is essential for reproduction. For the full realization of possesssion, such as love demands, as close a coming together of the flesh of the two lovers as is possible is essential in order

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that they may feel that while twain they are practically one flesh. This intromission realizes this coming together as no other method can for here there are set in motion currents of sex magnatism whose waves can be distinctly felt permeating the whole body, vitalizing it to a degree that would be otherwise unattainable. A married couple deprived of this congress would soon lose for each other much of the love that is essential to marital happiness, unless, of course, they were an elderly married couple.

What more can we say on this particular subject except to add that the evidence has shown that women are not peculiarly erotic, and that feminine love may warrantably be characterized as spiritualized sexuality.

In a forthcoming issue :

WOMAN--THE BOSS !

By Arthur E. Whatham

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SEP
Medical Life

VOL. 28, No. 6 JUNE, 1921

MEDICAL LIFE

Treatment of Ptosis

John L. Kantor, M.D.

Marcello Malpighi

Victor Robinson, M.D.

Complications of Gonorrhea

A. L. Wolbarst, M.D.

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(*Established* 1851)

VICTOR ROBINSON, M.D., Editor

NUMBER 6 | VOLUME 28 | **JUNE, 1921** | OF NEW SERIES | NUMBER NINE

THE MODERN TREATMENT OF GASTRO-INTESTINAL DISEASES

By John L. Kantor, M.D.,

Chief in Gastrointestinal Diseases, Vanderbilt Clinic, Columbia University.

II—The Treatment of Ptosis and the Asthenic State

It is quite impossible to treat gastrointestinal diseases successfully without being thoroughly conversant with the principles underlying the management of ptosis and its associated conditions. Up to very recently the subject of ptosis has received but scant treatment in text-books, or else it has been handled in a sort of off-hand way as if it were one of the rare and unusual diseases. As a matter of fact, of course, ptosis is not a disease at all—and this may explain the embarrassment with which the subject has heretofore been approached—but is a very common form of inferior physical make-up met with in every day experience. Anywhere from one-seventh to one-third of the "gastrointestinal" cases seen in private or dispensary practice have one or more of the earmarks of visceroptosis. The mere sight of a narrow body with obvious malnutrition should at once suggest to the physician the presence of long, low-placed organs characterized by more or less atony and sluggish function; in short, a condition of universal asthenia. It is now well-known that such a state of affairs may exist and cause no end of symptoms without any organic disease being present. On the other hand, the asthenic habitus may complicate some other condition such as tuberculosis or gastric ulcer, or a severe intestinal neurosis. In any case, treatment of the ptosis as such is always in order.

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General Management.—For practical purposes the asthenic individual may be considered as being in a state of chronic fatigue or exhaustion; as one who, having used up his "normal excess" of strength, is living on his reserve. The primary indication, therefore, is rest, both mental and physical. It is well to make clear to such a patient that he is carrying too big a load for a frail body, and that he should make every effort to reduce to a minimum all unnecessary burdens and responsibilities. The question of securing sufficient sleep is of the first importance. The asthenic individual requires from one to three hours' more repose than the average person. Practically, no less than nine hours should be accepted as the minimum sleeping period, and all the patient's activities should be planned in conformity with this requirement.

Whenever possible, a period of rest in bed for at least two weeks should initiate the treatment of a case of ptsosis. By this means a threefold purpose is served:

1. Both body and mind secure a much-needed relief from fatigue.

2. The displaced organs are automatically lifted and their function is correspondingly improved.

3. It is easier to improve the state of nutrition because the same amount of food goes further under conditions of bed rest than when the patient is up and about.

Some authors recommend raising the foot of the bed during the cure, but this procedure is by no means essential.

The practice of making external applications of heat to the abdomen is a good one. Either an electric pad or warm moist compresses may be used. The application may be constant over the twenty-four hours, or else it may be restricted to the first few hours after meals.

Unless there is some very special contraindication a bed rest cure should invariably be combined with a fattening cure to be described directly.

Fattening Cure.—The first indication in the active treatment of any case of ptsosis and malnutrition is to overcome the diminished intraabdominal pressure and the drag and malfunction of the displaced viscera. Temporarily this can be accomplished to a certain extent by external support, as will be described later. Surgery has been tried and has been found wanting. The only hope of permanent improvement lies in (1) increasing the intra-abdominal fat bolster by means of a fattening cure, and (2)

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improving the configuration of the body by means of special exercises.

A fattening cure is always best carried out in an institution where expert professional care is available. The nurse should be held absolutely responsible for serving the meals on time, keeping a strict record of all food ordered and eaten, and above all, forcing the feeding. It ofttimes happens that patients protest that they "cannot take so much nourishment," that the food "goes against" them, that they never were "big eaters." In all such cases it may be found advantageous to explain carefully that a chronically underfed body seldom craves food; that if the appetite had been big the patient would never have been undernourished; that the food must be taken first, with an effort, like medicine, before enough new body cells are added to crave the extra nutriment; and finally that, after the first few pounds are gained, the appetite will be bound to grow in a way that no artificial appetizer could possibly make it.

Perhaps the simplest way to go about feeding up a patient is first to find out exactly what and how much he has been eating. If his selection is reasonably satisfactory his own menu may be adopted as the minimum intake for his three regular meals of the day. If for any reason the selection is not satisfactory the patient should be put on a basic standard bland diet such as will be described in a subsequent section of this presentation. Between meals and at bedtime extra nourishment should be ordered, the usual hours selected being 10 a.m., 4 p.m., and 10 p.m. This nourishment ordinarily takes the form of milk or some milk modification.

A few details may not be out of place as to the use of milk in forced feeding. There is no question that this substance is one of the most nutritious obtainable. Some patients, however, claim that they cannot take milk. They may say, for example, that milk makes them constipated, or that it causes diarrhea, or that it produces nausea or that it "sours on the stomach," or brings on gas, or distress, or some other neurotic symptom. It is quite possible, of course, that milk in some one form does disagree with the patient. There is no reason, however, why some other untried form may not be quite satisfactory; and the number of milk modifications is almost unlimited. Thus, if cold milk disagrees, hot milk may be taken without any difficulty whatever; or the milk may be given sour in the form of Fermillac, Koumyss or Zoolak; or it may be modified with lime or

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seltzer water, or taken with ice as a milk shake with or without flavoring of cocoa, vanilla, or coffee. Eggnogs and custards also contain milk and are highly nutritious. Besides eggs, other things may be added to milk to increase the caloric content. Lactose can be readily administered in this way in substantial quantities without perceptibly changing the taste, and hot milk and butter is by no means an unpalatable combination. Where nausea and vomiting are complained of Delafield's mixture may stay down where nothing else will.

℞

Cream
Milk
Water, aa q. s. ad O i
Cerium oxalate, gr x
Sodium bicarbonate, gr xx

Sig. Keep on ice. Administer cold.

As already mentioned, the actual choice of foods at the three regular meals can be left largely to the taste of the patient with the understanding that a definite minimum of food intake should be established and every effort made to increase still further the caloric value of the diet. In this regard the most satisfactory, in the sense of highly concentrated foodstuffs, are cream and butter. The former can be used in the morning with stewed fruit, cereals and coffee, and at lunch and dinner with desserts of various kinds. Butter can be taken in surprisingly large amounts with fresh hot toast, with crackers, or with cereals; or with potatoes, peas and other similar vegetables; or else, as a sauce, with meat and fish. A daily minimum of a quarter of a pound of butter should be begun with, and the amount increased as far beyond this as possible.

Just as soon as an appreciable gain in weight has been made, and when the patient is well rested, it is wise to begin active exercises. The idea of this plan is to replace the intake of food through forced effort, by a more natural craving for food based on a vigorous, physiologic stimulation of appetite. Experience has shown that when a proper amount of muscular exercise is combined with a fattening cure not only does the gain in weight progress without diminution, but the flesh put on is more likely to "stay with" the patient after the cure is over than would otherwise be the case. Just when these exercises may be begun varies of course with the progress of the individual, but ordinarily a start may be made by the end of the second week. The exact type of exercise chosen may be left largely to the inclina-

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tion of the patient. Those who have engaged in athletics may indulge moderately; others may practice exercise or walking, or do light work in a gymnasium. In any case it is of prime importance that the point of fatigue be avoided and that only the stimulating effect be made use of.

A fattening cure, as above described, should be persisted in until the restoration or attainment, as the case may be, of the normal weight for the particular sex, age and height of the patient in question. If the normal figures can be exceeded by five or ten pounds, so much the better. Any gain beyond this point, however, is not likely to be permanent, and is, on general principles, undesirable.

Radical Physical Reconstruction.—It may prove of distinct value, particularly in younger individuals possessing the pronounced asthenic or ptotic habitus, to institute a course of special developmental exercises. The object of these is nothing less than a radical reconstruction of the body framework, with the end in view of improving the posture and, indirectly, the position and function of the body viscera. Dr. John Bryant (to whom we owe the best exposition of this method of treatment) has shown in his studies on "the congenital visceroptotic invalid" that the loose viscera depend chiefly for their support on the activity of the lateral abdominal muscles; that these muscles are most efficient only when working from lower ribs held firmly at or near full expansion, a condition which also enlarges the upper abdominal cavity; that elevation of the lower ribs implies contraction of the intercostal muscles and is greatly facilitated by erect posture with arching of the back; and that erect posture depends upon proper activity of the erector spinae group of muscles. With these principles in mind Dr. Bryant undertakes to remould the asthenic torso by means of carefully graduated active exercises involving, in turn, (1) the erector spinae group of muscles, (2) the respiration group of muscles, and (3) the abdominal group of muscles. For details of exact technic the reader is referred to the original article (Transactions of the American Gastro-Enterological Association, May, 1918). The following extract is taken from the description of the respiration group of exercises:

> The patient reclines flat upon back with legs extended. The instructor places his hands over the lower free ribs on either side, and tells the patient to push his hands out by the force of his respiration. This soon localizes the respiration, and one may demonstrate to the patient that these same ribs may be "sprung" outward by muscular

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effort alone without any inspiration, and that by the same muscular effort these same lower ribs may be kept constantly in this expanded position of full inspiration. The next question from the patient invariably is, "where shall I breathe, then?" The answer is, "in the epigastrium with your diaphragm."

With the lower thorax in full expansion the instructor places his hand upon the epigastrium and makes the patient take a series of very short rapid breaths with mouth wide open. The intercostals have no time to act; immediately the respiration may be made less rapid and deeper, and the patient soon has learned that he can get all the breath he can use in this manner (i. e., by diaphragmatic respiration only).

The above exercises may be combined with the active and passive employment of special forms of the Zander apparatus, which has been devised for the expansion of the lower chest and the correction of the posture.

Abdominal Support.—Abdominal support is indicated in every case of ptosis and it should be continued uninterruptedly, except for the time actually spent in bed, for just as long as it gives relief from symptoms. This may mean indefinitely in many cases, particularly in those, unfortunately in the majority, who cannot afford so thoroughgoing a program of reconstruction as is provided in a course of bed rest, fattening cure, and corrective exercises.

The relief obtained from abdominal support is to be attributed to the lifting of the ptosed organs and to the increase in intra-abdominal pressure. This is accomplished by any means that will compress the lower abdominal wall back against the spine, thus forcing the abdominal organs out of the pelvic cavity. There are three practical methods for accomplishing this end, viz., adhesive strapping, binders, and corsets. These must all be applied with the patient flat on his back, the organs being restored in this position to their normal level.

Adhesive strapping has the advantage over the other forms of abdominal support in the speed with which it can be applied, and in the fact that when skilfully handled it probably gives better uplift than the other methods. Its value therefore lies in its usefulness as a therapeutic test, and in its service as a measure of emergency relief. Unfortunately the adhesive support loosens quickly and is, besides, a great strain on tender skins. For these reasons the life of an adhesive bandage seldom exceeds ten days or two weeks.

A simple and satisfactory support of this kind can be made as follows: Strips of adhesive plaster are used, each approximately 2½ inches wide. Four of the strips should be 16 to 20

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inches long, depending upon the size of the patient; the fifth should be 14 to 16 inches in length. The patient should be placed supine on the table, the pubic hair shaved dry, and the skin carefully wiped free from moisture. Before and during the application of each strip the patient should keep his abdomen drawn in as far as possible. The first strip is applied at the pubic level just to the right of the midline, and is carried obliquely up and out over the crust of the right ilium around the small of the back, ending to the left of the spine. The patient assists by slowly twisting around in the opposite direction, keeping the abdomen well retracted during the whole procedure. The second strip is applied in the same manner as the first, but on the left side. The third strip is applied over the right side as was the first, but pursues a more horizontal course and is begun at the opposite (left) side of the pubic arch. It crosses the first strip at the lateral abdominal wall and winds up at the left of the spine at a slightly lower level than the first strip. The fourth strip is applied similarly over the left side, beginning at the opposite (right) side of the midline. The fifth (last) strip is pulled tightly straight across the lower abdomen from the level of one trochanter to the other. This completes the bandage. The general effect, it will be observed, is to suspend the weight of the lower abdomen from the spine behind. It is important that the strips be laid flat and that wrinkling of the skin be avoided.

Binders and corsets should never be taken from "stock," but should be carefully made to order for the individual wearer. As already emphasized, they should never be put on in the standing position. Binders have the advantage of being relatively light and inexpensive, but will slip up when the patient moves about unless prevented by proper adjustments. Perineal straps or thongs are objectionable. The best models have flaps coming down over the thighs in front and connecting with an adjustable strap encircling each limb at the crotch. If the abdomen is flat a pad may be worn with comfort.

A corset has the advantage over a binder of combining considerable style with elevation of the ptosed viscera. The choice between corset and binder can be left to the individual patient. One point is of importance. Inasmuch as practically every ptotic patient feels immediate relief of symptoms and a sense of well-being and increased vigor from the application of abdominal support, persistent complaints of discomfort should suggest to

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the physician either (1) some technical error in the fitting of the appliance, or (2) the presence of visceral adhesions preventing the free uplifting of the organs.

Management of Special Conditions.—a. Atony. In all asthenic states the hollow viscera tend to partake of the general atonic condition. The stomach, for example, shows considerably impaired peristole. If the emptying time is much delayed—though of course never so much as in organic obstruction or severe spasm—appropriate changes in diet are indicated. The principle of frequent small dry meals is the one to follow, the meals being small to prevent stretching of the weakened stomach musculature, and dry, that is, concentrated, for the same reason. From four to six meals are generally given, depending on the conditions in the particular case. Great care must be exercised to secure adequate mastication. Fluids should never be taken with meals, but a glass of water or milk may be taken an hour or two before eating, best of all before breakfast, in the hope that most of the fluid will have left the stomach by the time the solid food is ingested. As an additional therapeutic measure gastric lavage or aspiration is often of great value, particularly if there is any tendency to the accumulation of food residues. For details of technic the reader is referred to the first section of this presentation.

b. Constipation. Persons of the asthenic habitus are much more likely to be constipated than more stocky individuals. Many asthenics have developed a full blown cathartic habit. It is very important, especially when carrying out a fattening cure, that cathartics be done away with in order to eliminate the frequent watery stools and inevitable drops in weight associated with constant purgation. In some cases there may be difficulty in persuading a patient that he will survive a few days of preliminary discomfort. Such a one should be reassured that his constipation will automatically disappear as he becomes fatter, and the position and tonus of his colon becomes restored to normal. As a matter of fact it is by no means necessary that the bowels be opened daily from the beginning of treatment. If, however, some special need should arise, a suppository or small enema, preferably of oil, will usually suffice for the purpose.

In a great many cases the mere wearing of a supporter and the adoption of a strict regular regimen of feeding will bring about the establishment of regular evacuations. In others the consumption of coarse, residue-containing foods is indicated; and

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in general the free drinking of water on an empty stomach, as before breakfast, is highly beneficial.

c. Associated Neuroses.—The association of various neurotic manifestations with the asthenic habitus is one of the commonplaces of medicine. Indeed it is not surprising that a weak organism should be, at the same time, irritable and unstable. It is not intended to discuss here the therapy of the digestive neuroses. Suffice it to say that sedative measures are strongly indicated, and that these should include not only drugs, but a reasonable amount of psychotherapy as well. Of the drugs, the general sedatives act best, the most useful being bromides and the somnifacients.

Operations in Asthenics.—A great therapeutic gain would result if it were universally realized that asthetics as such should not be operated upon. There is no question that in the past any number of useless—and by no means harmless—surgical interventions have been made on the false assumption that symptoms essentially associated with the asthenic condition could be relieved by surgery. The most common of these unfortunate operations have been of three kinds: (1) attempts to change the position of ptosed organs by pexies of various sorts: gastropexies, colopexies, nephropexies; (2) attempts to improve the emptying or "drainage" of atonic organs by gastroenterostomies or by various short-circuiting operations on the colon; (3) attempts to relieve atypical symptoms referable to the right lower quadrant by appendectomy. Such procedures are to be deplored not only because of the mortality risk involved, slight as it may be in some cases; not only because of the danger of further deforming a weak mechanism by ill-advised efforts at improvement, or by the development, in susceptible individuals, of postoperative adhesions; not only because of the likelihood of fixing, perhaps for life, a severe neurosis, but chiefly because of the ignorance revealed by responsible physicians and surgeons of the essential nature of the malady from which the patient suffers. Fortunately there is every indication that the day of this type of surgery is rapidly drawing to a close.

New York.

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Medical History
Continuing the
MEDICO-HISTORICAL BULLETIN

MARCELLO MALPIGHI
(1628-94)

By Victor Robinson, M.D.

Upon the canvas of a century, history paints a series of pictures. And when we look at the seventeenth century smeared across the foreground we see a picture in red—the Thirty Years' War. Charles V had attempted to bring the Lutherans back to Peter, but abdicated in disappointment, amusing his leisure by trying to make two watches work exactly alike. His failure caused him to remark indulgently, "I can't even compel two watches to agree, and yet expected to make two peoples think the same." Unfortunately his successor, Ferdinand of Styria, did not accept fate so philosophically; a pupil of the Jesuits, he undertook a pilgrimage to Loretto, and on the altar of the saints swore to exterminate Protestantism. Formerly the followers of Loyola had taught in lowly places—in the school-room and by the hearth—but now they stood behind a throne and instilled the poison of persecution in an emperor's brain.

Many bowed their heads to the new despotism, but in his native land the spirit of John Huss was not altogether dead; outraged beyond endurance, the Bohemians marched to the council chamber of Prague, seized two of the most notorious of their tormentors, and threw them out of a window—the ground being seventy feet below. "Help me, Virgin Mary," cried Martinitz as he fell, and to the amazement of the spectators the ejected stadtholders were not killed, and managed to crawl to safety. "A miracle wrought by the Virgin Mary!" exclaimed the Romanists, while the Hussites dryly remarked that their escape was due to the lucky fact that they landed in a pile of manure.

But though the Thirty Years' War had its baptism in a dunghill, it drenched Europe in blood for decades. Catholic and Protestant called on Christ and drew the sword that was not to be sheathed for a generation. For a time Gustavus Adolphus, the noblest soldier of the age, appears on the scene, but the terrible Wallenstein, the Alva of the seventeenth century, pillaging city after city with his armed brigands, was the characteristic

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figure of this era. Thousands of populous villages became absolutely extinct; wolves roamed through the empty cottages, and in the air the ravens cawed dismally and died of starvation. Beneath the ruined corn-fields mouldered the bones of mothers and babies. Peasants were hunted like rabbits, and nailed to posts as targets. Women were rounded up in herds and driven to camp to serve the soldiers. The people ceased to sow the earth, for the troops of Tilly reaped the harvest. Family life gone, property lost, the naked populace wandered through the country, feeding on dogs as hungry as themselves—and later human flesh was boiled in the fields and devoured. The long murder with its madness, pestilence walking with famine, typhus abroad with theology, made all Germany a yawning graveyard which swallowed millions.

Everything seemed to be reddened with a crimson mist. The dizzy brains of the people whirled in blood. On the earth not dew gleamed, but blood. In the ocean not water rolled, but blood. From the clouds not rain fell, but blood. From the eyes not tears dropped, but blood. From the breat not milk flowed, but blood. So the slaughter and the spilling continued for thirty years—and often was heard the tolling of a chapel-bell, and the voice of a monk droning a mass to the glory of God.

When we turn from this huge religious panorama to contemplate the humbler vignettes of science, we see brighter pictures, for the seventeenth century was the century of Newton and Leibnitz, of Galileo and Kepler, of Halley and Flamsteed, of Gilbert and Wallis, of Descartes and von Guericke, of Napier and Briggs, of Romer and Huyghens, of Hooke and Drebbel, of Torricelli and Lippersheim—the golden age of astronomers and physicists, when for the first time the heavens really spoke to the earth. "In consequence of the innumerable books," complained the industrious Leibnitz, "even the greatest literati cannot survey the whole field. Our scientific life has become a mere slop-shop."

In medicine, too, there was endless activity. At this period we meet Sydenham, the English Hippocrates; Willis, who differentiated between diabetes mellitus and diabetes insipidus; Felix Platter, who published the first classification of diseases; Glisson, who published a classic account of rickets; Thuillier, who showed that ergot was due to corn smut; Bontius, who described beriberi; Colle and Musitano, who showed that syphilis could be conveyed by kissing and from drinking-vessels: Guar-

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inoni, who described gummata of the brain; Ramazzini, who opened up new medical territory—the immense field of trade-diseases.

The compound microscope had just been invented, and Leeuwenhoek bought hundreds of them, ground half a thousand lenses himself, and discovered the outposts of the invisible world of bacteriology, while Athanasius Kircher cast a suspicious eye on these recently-revealed microörganisms, already regarding them as the cause of infectious disease; Leeuwenhoek's pupil, the young Johann Hamm, first focussed on the spermatozoa; Swammerdam viewed the red blood-corpuscles; Malpighi found the capillary anastomosis between arteries and veins; Robert Hooke saw and drew the plant-cells; and Clopton Havers described the microscopy of bone.

Obstetrics emancipated itself from the midwives, and was moulded into a science by the hands of such men as Mauriceau, Deventer, Paul Portal, de la Motte, and van Hoorn. The obstetric forceps was invented at this time by the Chamberlens, but it is not with pride that the historian records it, for this useful instrument was kept a secret in the family for generations. Nature frequently puts talents into the wrong hands.

Chemistry was advanced by the labors of van Helmont, who introduced the term and concept of "gas;" by Lemery, who demonstrated the presence of iron in the blood, and whose *Cours de Chemie* was a valuable compendium of the chemical knowledge of the time; by Sylvius de la Boe, who proved the presence of volatile alkalis in plants, and trained several eminent pupils; by Boyle, who enunciated the law of pressure upon gases which is still known as Boyle's Law, and who applied Francis Bacon's inductive method to chemical problems; by Mayow, who was on the trail of oxygen and the true theory of respiration; by Kunckel, who regarded chemistry as the basis of medicine. Unfortunately, the chemistry of this period was marred by the birth of Becher and Stahl's phlogistic doctrines. George Ernst Stahl was the type of the propagandist who has done so much damage to truth; he was learned, honorable and wrong. He regarded his opinions as a revelation from God, and by his constant insistence on them he held chemistry captive to a false theory for over a century. He was one of the men who turn the stream of progress backward—his views on combustion were far behind those of his predecessor, John Mayow. If nature had given

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Stahl's mother a contracted pelvis, science would have been the gainer.

Although all the excreta of all the animals retained their honored places in the pharmacopeias of the period, the materia medica was enlarged by the introduction of numerous remedies which have a more modern sound; benzoic acid was described by Blaise de Vigenere, sulphate of potash by Oswald Cross, tartar emetic by De Mynsicht, calomel by Beguin, and de Mayerne, ipecac by Piso and Helvetius, black cohosh by Plukenet, cowhage by Parkinson, pareira brava by Pomet, calumba by Redi, star-anise, vanilla, and gamboge by Clusius, tartrate of potassium by Lemery, Iceland moss by Borrich and Hjarne, cascarilla by Stisser, serpentaria by Thomas Johnson, petroleum by De La Roche d'Allion, acetate of mercury by Lefebure; cinchona, catechu, jalap and lycopodium were introduced into Europe; Nehemiah Grew discovered magnesium sulphate in Epsom waters, Glauber discovered sodium sulphate and zinc acetate, Padre Acugna discovered oil of copaiba, Brandt discovered phosphorus, and Sala discovered the method of preparing silver nitrate.

Work of enduring value was done it otology and ophthalmology, especially by Duverney, Maitre-Jean, Brisseau and J. J. Rau. Gastrotomy, resection of the jaw, amputation of the thigh, transfusion, and intravenous medication were among the surgical procedures introduced at this time; Sanctorius' trocar, speculum and lithotrite were among the instruments invented; and Hildanus, Hytell, Dionis, Purmann, Muralt, van Solingen, Wiseman, Magati, Marchetti, Severino, Musintano, Scultetus were among the prominent surgeons—names of importance, though hardly epoch-making.

But if seventeenth century surgery did not advance further than Parè, workers in anatomy and physiology poured far beyond the broad gate that the scalpel of Vesalius had opened; half the structures in human body are named after seventeenth century men—Graafian follicles, Haversian canals, Glasserian fissure, Pacchionian bodies, Bellini's tubes, antrum of Highmore, Malpighian layer, circle of Willis, valves of Kerkring, Schneiderian membrane, Glisson's capsule, Casserio's artery, Peyer's patches, Lower's tubercle, Pecquet's cistern, Poupart's ligament, Wormian bones, Ruysch's tunica, Spigelian lobe, Ridley's sinus, Riolan's muscle, Tulpius' valve, Vieussens' ganglion, Nuck's canal, Wirsung's duct, Wharton's duct, Stensen's duct, Rivini's duct,

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Bartholin's glands, Brunner's glands, Cowper's glands, Meibomian glands.

To this period belongs the "triple discovery" of the lymphatics, the lacteals, and the thoracic duct, and it followed the chief physiological discovery of all time—Harvey's demonstration of the circulation of the blood. Harvey's book on the subject was published in 1628—not in London, however, but in Frankfort-on-the-Main, as the British censor, with the characteristic intelligence of censors, refused to permit its publication at home, though today England considers the author of *De Motu Cordis* its medical Shakespeare.

In the very year that this book appeared a swarthy-skinned child lay in its cradle, but as he was destined to carry on Harvey's work, we must follow him with interest—from the time that he toddled aimlessly around his parent's house until his first steps in the larger world outside, until he walked with glory in new-found paths of science, striding through many avenues of research, even until that later time, when like a tired wanderer he slowly tottered down the last road of life.

Marcello Malpighi was born on the tenth of March, 1628, at Crevalcuore, a town so small it is doubtful if it had a town harlot, but it has its place on the scientific map. In 1630 a shock of terror ran through Italy—the plague. Not only did it desolate Milan, Florence and Mantua, but it was raging in Bologna—and Bologna was less than twenty miles from Crevalcuore. And when the plague came, death wore league-boots—twenty miles was as nothing. Any moment it might be necessary to send for the pest-doctor, and when he approached in his long red robe of Cordova, inhaling the fumigants that filled the huge leather snout that covered his nose, peering cautiously through his stout mask, it was time, too, to send for the priest.

As if God's wrath were not enough, men must add their evil deeds: on the first of June, while the plague was sweeping through Milan, a woman looked out of her window and saw a man smear the houses with plague-salve. It was health commissioner Piazza, and when accused of spreading the pestilence he protested that he had been writing from an ink-horn at his belt, and was merely wiping his ink-stained fingers against wall. But after enduring the torture twice he confessed his crime, and stated that the barber Mora had given him the poisonous ointment—and one ordeal made the barber also admit his guilt. Later they recanted, swearing it was the torture that made them yield,

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but what man in all Milan believed them innocent? The bodies of Piazza and Mora were turn with red-hot pincers, their hands were cut off, their bones were broken, for hours they were stretched on the wheel, then they were burned and their ashes scattered into the river. The house of the crime was razed to the ground, and on the spot was erected a Column of Infamy, describing the trial and ending with the warning, "Keep afar off, then, afar off, good citizens, lest this accursed ground should pollute you with its infamy."

Who knew if such a column might not replace the olive-trees of Crevalcuore? Next to the Malpighis lived the Sbaraglias, a sinister clan who would not scruple to use the plague-salve. But disquieting thoughts like these did not disturb happy little Marcello Malpighi. He had long graduated from the cradle, for he was now two years of age and could do many things; he could laugh in Italian, and could chase the chickens over his father's farm, and could say *grazie* for a piece of orange—but sometimes wouldn't.

Youth that is passed at home is seldom eventful—especially if father's income is sufficient—and Malpighi remained with his parents until his seventeenth year, beloved for his affectionate disposition and intelligence. In 1645 he left Crevalcuore to pursue philosophy at the University of Bologna. Here he studied uninterruptedly until 1649, by which time he was twenty-one years of age, but then fate gave him his first blow, and it was a smashing blow—almost at the same time his father, his mother and his grandmother died. Plato and Aristotle served very well in the days of tranquillity, but how futile their philosophy seemed to a heart raw with sorrow. The lad was prostrated, yet in the midst of his affliction heard the stern voice of duty. He was the oldest of a family of eight, and the three children next to him were girls. Let the sobs choke him and the tears blind him—he had work to do. The old folks must be buried, his younger brothers and sisters must be comforted, the estates needed attention; easeful boyhood was over, and manhood with its responsibilities had begun.

Money and horses and silver spoons are not the only possessions that parents hand down to their children; often they bequeath heirlooms which are not mentioned in their wills, and which no smart lawyer can set aside; Malpighi, for example, inherited a feud. Of course some men would have been delighted with a feud; they could have enjoyed themselves with it, but

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Marcello Malpighi was a scholar, not a fighter, and although from the adjoining property the Sbaraglias scowled at him, he thought of his books and not his dagger, and the next year he was at the University again. We may mention, however, that Malpighi's younger brother, Bartolommo, had some Benvenuto Cellini stuff in him, and some time later so far forgot himself as to kill one of the Sbaraglias.

Back at Bologna, Malpighi enrolled as a pupil under the peripatetic philosopher, Natali, who gave him at least one valuable lesson: "Study medicine," he advised. So in 1651 Malpighi became a pupil of Massari, Professor of Medicine.

It was now many years since Vesalius and Fallopius had exposed the mistakes of Galenism, but a university is sometimes the last refuge of ancient error, and several of the professors at the University of Bologna still clung to the old doctrines, but Bartolommeo Massari was the radical of the faculty; not only did he expound the new learning, but like a true Vesalian he dissected human bodies in his own home.

Among the favorite pupils who were admitted into this circle was young Malpighi, and the discussions, the dissections, and the experiments stirred his mind mightily. The pursuit of knowledge by the experimental method was still novel, and what its devotees lacked in numbers they made up in fervency. It is difficult to be ardent about something that everyone believes in—it is taken as a matter of course. Real enthusiasm is the privilege of the minority.

Yet Malpighi's attention was not exclusively occupied by the new learning, for there was a Miss Francesca Massari in the house, and it is odd how frequently pupils have fallen in love with the female relatives of their masters. In 1653 Malpighi graduated in medicine and philosophy, his thesis being a defense of the Hippocratic method of unprejudiced observation as opposed to the dognatism of Galen. Now that he was a doctor he could get married, and in 1654 Francesca became his wife.

But sorrow does not walk far from joy: the next year the Malpighis were mourning the sudden death of Massari. Fortunately, a new interest came into Malpighi's life, for in 1656 the Bolognese senate nominated him as public lecturer in medicine, and he had no sooner undertaken his duties than Ferdinand, grand duke of Tuscany, created for him the chair of Theoretical Medicine at the University of Pisa.

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The enmity of the Sbaraglias was a nuisance to Malpighi; there is always a lure in a strange place, and the University of Pisa was famous—it was one of the hobbies of the Medici family. So the twenty-eight-year-old professor journeyed to Pisa near the sea. It is said that during one of his first lectures the new doctrines which he expounded so offended the members of his audience that they gradually withdrew until only one listener remained.

If this story is true, it was no misfortune for Malpighi, for that one man was Giovanni Alfonso Borelli, formerly of Naples. Borelli was the medico-mathematician who viewed the human organism as a machine, treating muscular motion, respiration and digestion as mechanical processes, explaining physiological problems by the laws of physics. An irascible man, of a morose and quarrelsome disposition, assertive, aggressive, antagonistic, usually unpleasant and often unbearable. Borelli was nevertheless a profound thinker who not only did important scientific work himself. but inspired others to achieve and accomplish. It was under Borelli's direction that Auber discovered the structure of the testicle, and Bellini, a youth of nineteen, discovered the uriniferous tubules, and it was while working with Borelli that Malpighi made his first discovery—the spiral nature of the fibres of the bullock's heart. Borelli was twenty years older than Malpighi, and the younger man looked upon him as a father, consulting him almost every day. Borelli taught Malpighi the physics of Galileo, and Malpighi instructed Borelli in biology. The relationship between them indicates how modest and lovable Malpighi must have been, for few could get along with the fierce Neapolitan. Together they performed dissections which were attended by dukes and princes, thus giving rise to the Academy of Experiment, which was soon removed to Florence, the Academicians meeting in the Ducal Palace, where the royal host and his family mingled freely with them. Galileo was a Pisan, but Malpighi was not even Pisa-plated; he claimed the humid climate did not agree with him, for although brought up in the country he was always in delicate health, and after three years he returned home, meeting and studying with Fracassati and Buonfigluoli, life-long friends.

The riddle of respiration had puzzled philosophers at least since the days of Aristotle, and surely it is interesting to know how we breathe. Many of the acute minds of the mid-seventeenth century—Boyle, Hooke, Lower, Mayow and Borelli—

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tackled this problem, and in 1660 it became the object of Malpighi's inquiry. Up to this time the lung had been regarded as a sort of porous parenchyma—Fabricius compared it to tow—and it was believed that somewhere within its substance the smaller divisions of the pulmonary artery lost themselves, pouring out their blood into the open spaces, where it was later gathered up by the pulmonary veins, while the minuter parts of the windpipe were also supposed to terminate in this fleshy tissue. But now, with the aid of his lenses and the lungs of a dog, a tortoise and a frog, Malpighi began that series of observations which have caused him to be regarded as the greatest of microscopists and the founder of histology.

He showed that instead of a perforated mass in which the blood was poured and then sucked out, the lung was vesicular in nature, the bronchi being continuous with the air vesicles, the air and blood of the lung never actually in contact, but separated by a membrane, and that the blood was constantly within channels, even when crossing from the arteries to the veins—for he observed the capillary circulation. This momentous discovery bridged the one remaining gap in the Harveian hypothesis—for Harvey could never explain where or how the interchange occurred between arterial and venous blood. Malpighi wrote:

I saw the blood showered down in tiny streams through the arteries, after the fashion of a flood, and I might have believed that the blood itself escaped into an empty space and was gathered up again by a gaping vessel, but an objection to this view was afforded by the movement of the blood being tortuous and scattered in different directions and by its being united again in a determinate part. My doubt was changed to a certainty by the dried lung of a frog which to a marked extent had preserved the redness of the blood in very minute tracts, which were afterwards found to be vessels, where by the help of a glass I saw not scattered points but vessels joined together in a ring-like fashion. And such is the wandering about of these vessels as they proceed on this side from the vein and on the other from the artery that the vessels no longer maintain a straight direction, but there appears a network made up of the continuations of the two vessels. This network not only occupies the whole area but extends to the walls, and is attached to the outgoing vessel, as I could more abundantly and yet with greater difficulty see in the oblong lung of the tortoise, which is equally membranous and transparent. Hence it was clear to the senses that the blood flowed along sinuous vessels and was not poured into spaces, but was always contained within tubules, and that its dispersion is due to the multiple winding of the vessels. . . . From the simplicity which Nature uses in all her works, it may be concluded from these results that the network which I once thought to be nervous in character is really a vessel attached to the vesicles and sinuses carrying

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thither the mass of the blood or carrying the same away, and that although in the lungs of the more perfect animals a vessel seems sometimes to leave off and gape in the middle of the network of rings, yet it is probable that, as in the frog and the tortoise, the vessel in question is prolonged further into very small vessels after the form of a network, although these on account of their exquisite fineness escape our senses.

These discoveries were announced in two epistles which Malpighi dedicated and sent to Borelli, who was very much pleased with them, and urged that they be published. Thus, in 1661, *De pulmonibus observationes anatomicae* appeared from the press, laying the anatomical foundation for a true conception of the respiratory act.

In the following year scientific circles learnt that the chair of medicine at Messina had become vacant through the death of Pietro Castelli; before coming to Pisa, Borelli had taught in the Sicilian university, and he immediately wrote to its senate, recommending the appointment of Malpighi. And when Malpighi was invited, he agreed to go—even the fact that he was offered a good salary did not frighten him, for he could accept it in his wife's name.

In a temperate region, nature is garbed as a respectable matron, but in Messini she is arrayed as a wanton, in many colors and odors—the spectrum suffused in perfume; languorous and passionate, she is warmed by the sun of Sicily and bathed by the waters of the Mediterranean; with her extravagant and uncurbed beauty, in each generation she allures afresh the tribe of Theocritus. But Malpighi did not watch the tints of azure blend with the smell of myrtle; this poet's paradise was to him a workshop; he took out his tools and began his labors.

The sea at his feet teemed with life; in the shark he found the spiral intestinal valve, and in the sword-fish saw the twisted optic stalk. Of course he wrote about his researches to Borelli, who answered: "I was astounded by the drawings of the sword-fish, of which observations you should make great capital, and should easily find traces of this in other larger animals, such as the ox. If it proves to be so, I should advise you to compose a treatise upon the subject and have it published."

The years at Messina were fruitful ones; Malpighi was in his early prime, and activity was a joy and a necessity. He thought of writing a great work on anatomy, reviewing the whole subject, and in accordance with this plan he completed a chapter on the circulation and on the lungs; but when Borelli

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and Fracassati heard of it they objected loudly, telling him that such a task was for second-rate men, and that Malpighi must not become a compiler; Malpighi's Sicilian patron, the enlightened Viscount Ruffi, joined in the protest, and Malpighi agreed to devote himself to original work exclusively.

He studied the brain, discerning the cortical cells and their connection with nerve fibres, and showing that the fibres of the white matter form tracts which connect the surface of the brain with various regions of the spinal cord. The papillae of the tongue were believed to be secretory in nature, but Malpighi merely stuck his tongue out, which soon became dry, and thus again an unpretentious fact overthrew an elaborate theory. Malpighi was able to demonstrate their provision of nerve filaments, and from this he deduced their gustatory function.

He studied hair and feathers and skin; he discovered the papillae in the skin, and as they were most abundant where the sense of touch was most developed, he correctly announced that he had discovered the organ of touch. He further discovered the lower layer of the epidermis, the rete mucosum, since known as the Malpighian layer, and he pointed out that here accumulates the pigment that makes the negro black. The pigment in the white man's skin is the same as in the black man's skin, only the latter has more of it, but this simple anatomical fact has made the black man an outcast on the white man's earth.

While investigating fat, he made microscopic examinations of the mesenteric blood-vessels of the hedgehog, and in recording one of his observations wrote: "And I myself in the omentum of the hedgehog in a blood-vessel which ran from one collection of fat to another opposite to it, saw globules of fat, of a definite outline, reddish in color. They presented a likeness to a chaplet of red coral." But like Columbus who discovered a new continent and knew it not, it was more than globules of fat that Malpighi saw—it was the red blood corpuscles; and his simple words were the first published record of the minute structures which have since been studied in infinite detail in every physiological laboratory.

In 1665—the year that the Royal Society of London published the first volume of its *Philosophical Transactions,* and Newton announced the law of gravitation—Malpighi printed the essay embodying his observation of the erythrocytes—*De omento, pinguedine, et adiposis ductibus;* at the same time he published three other tracts, in which were recorded the discoveries that

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have been named above. *De cerebro exercitatio epistolica* was addressed to Fracassati, *De lingua exercitatio epistolica* to Borelli, and *De externo tactus organo exercitatio anatomica* was dedicated to Ruffi.

But Malpighi had already completed a more important manuscript, *De viscerum structura exercitatio anatomica,* containing his work on the glands: the liver, the spleen, and the kidneys.

Malpighi apologized for writing on the liver after Glisson had already written so well, but Malpighi for the first time showed the liver to be constructed after the fashion of a conglomerate secreting gland, composed of hexagonal lobules, and decided that the bile duct was the ordinary secretory outlet of the liver, and proved by an experiment upon a kitten that bile is secreted by the liver and not by the gall-bladder.

This was good work, but Malgiphi began the essay in diffidence and ended it in humbleness:

> Among various questions which arise out of the discoveries which have been described, two stand out prominent. By what mechanism is the bile separated in the glandular acini of the liver, and what is the use of the bile in the economy? The illustrious Pecquet has made many deductions from the principles of mechanics concerning the former; since, however, acinus is so minute that it cannot be laid bare by even the very best microscope, we can only have recourse to hypotheses and to the working of similar mechanisms in attempting to explain this. As to the use of the bile, it is probable that after the food has been triturated in the stomach, juices of a different nature are poured upon it from the glands of the liver and of the pancreas, for a purpose not unlike that which appears in the cooking of food when out of sweet, sour and salt things mixed together, a new composition and a new taste are developed. Let the wide industry of others carry matters further; I am contented to have described the simple and rude structure of the liver.

How well he studied the kidney is apparent from the fact that today a glomerulus of the kidney is known as Malpighi's tuft, that the conic masses in the medullary portions of the kidney are known as Malpighi's pyramids, and that the rounded terminal dilatations of the convoluted uriniferous tubules are known as Malpighi's bodies.

He wrote his name also on the spleen, that mysterious organ which still has secrets that no physiologist knows. Malpighi described its vessels, parenchyma, trabeculae and capsule. "I found," he says, "the glands or vesicles distributed through the whole spleen like bunches of grapes. These have an oval form and are not much larger than the glands of the kidneys. They are, as I always observed, white, and even if the vessels are made

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turgid with a black injection they preserve their color. They are soft and friable and one can see no cavity in them." The masses of adenoid tissue in the splenic pulp are Malpighi's corpuscles, and the orifices of the capillaries that join the branches of the splenic vein are Malpighi's stigmata.

When we reflect that all these discoveries were made within four years, and that during that quadrennium much of his time was devoted to teaching at the University, we realize how gifted and successful a worker was Marcello Malpighi. But in the midst of his occupations he found time to remember that Messina was not his home. He wrote:

> The fourth year of my stay slipping by, and the curriculum of lectures being completed, I meditated a return to my own country. But it pleased the illustrious senate of Messina to request, in April, 1666, that I should continue yet another four years and with this in view I started to Bologna in the beginning of May with the plan, and if my health and domestic affairs permitted, of returning in the autumn. In Naples I met the learned Cornelius and Leonardus and others of that school and talked and consulted with them as long as I was able, to the great recreation of my mind. In Rome it was my fortune to meet for the first time the famous Stensen, who was very suave and friendly. At length I reached Bologna safely. After a short bodily rest I had printed the material which I had arranged concerning the structure of the viscera.

At Bologna he met his old friends, Fracassati and Buonfigluoli, who were overjoyed to see him. Malpighi was soon busy again, practicing medicine, performing autopsies, lecturing, investigating. Before he knew it autumn had come, and he received a note from the senate urging him to hasten back, but he made up his mind to remain in Bologna. Messina accepted his resignation with unwillingness, but cordially wished him happiness and success.

In the writings of Malpighi we find many generous references to his fellow scientists: "as the most learned Fallopius has very well observed . . ." "as Glisson, in that work of his on the liver which cannot be too highly praised, has very clearly shown . . ." "the famous Stensen . . ." "the illustrious Pecquet . . ." "the most learned Borelli. . . ." Personally, Malpighi was just as friendly and charming, and now that his wanderings were over, he sought the companionship and correspondence of savants the world over. He was in communication with Sylvius de la Boe, of Leyden; with Thomas Willis, of London, whose cerebral studies were more significant than Malpighi's; with Bartholin, the Dane; with Meibom, of Lubeck, who discovered the glands

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in the eye-lids which bear his name; with Lorenzo Bellini, of Florence; with Redi, of Arezzo, the physician-poet who proved the untenability of the theory of spontaneous generation; with Abraham Vilna; with Joachim Elsner, and with various others.

Sometimes he had distinguished guests, as when Nicolaus Stensen, whom he had met at Rome, visited him at Bologna. Stensen, who was ten years younger than Malpighi, was born at Copenhagen; at the age of eighteen he became a pupil of Thomas Bartholin, a famous member of a famous family. Two years later the Swedes besieged the Danish capital, and Stensen was one of the students who defended the city. He was faithful in building ramparts and fighting the invaders, and during the intermission, in order not to waste time, he attended lectures at the university. After graduation we find him at Amsterdam, studying under Blasius. One morning, while dissecting the head of a sheep to examine the parotid gland, the point of his knife slipped down an opening and struck with a sharp click against the teeth, and the fortunate youth knew he had discovered the duct which has since been known as Stensen's duct. This observation was embodied in his *Observations Anatomicae,* published at Leyden, in 1662, in the twenty-fourth year of his age.

It may be mentioned that Blasius attempted to gain credit for this discovery, probably because it had been made under his roof, and he had the effrontery to present his claims to Bartholin, who answered him, "Farewell, and control yourself." To Stephen Bartholin wrote a letter which was less epigrammatic and more hearty:

> Your assiduity in investigating the secrets of the human body, as well as your fortunate discoveries, are highly praised by the learned of our country. The fatherland congratulates itself upon such a citizen, I upon such a pupil, through whose efforts anatomy makes daily progress and our lymphatic vessels are traced out more and more. You divide honors with Wharton, since you have added to his internal duct an external one, and have thereby discovered the sources of saliva concerning which many have hitherto dreamed much, but which, no one has (permit the expression) pointed out with the finger. Continue, my Steno, to follow the path to immortal glory which true anatomy holds out to you.

When Stensen read this letter from his teacher no doubt he vowed to follow the paths of science all his life; alas! it is easier to battle against the Swedes than to fight Fate. It is true that Stensen's first discovery led him to speculate brilliantly on secretory glands, and he added to his renown by his cerebral studies, and by proving that the heart is a muscle; later he write a book

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which won for him equal fame in an entirely difference science—geology; he was an accomplished linguist, speaking French, German, English, Italian, Dutch, Latin, Greek, Hebrew—but many languages could not save him.

Destiny waited for that fine brain, and at last beclouded it. Stensen, whose father was court jeweler at Copenhagen, had been brought up as a strict Lutheran, and it is said that at Paris when the distinguished Bossuet tried to make a Catholic of him, Stensen scornfully informed him that he had no time for such things. But Fate has time. In Italy, a chance conversation with an obscure monk—a nun, according to others—achieved what Bossuet had failed to accomplish: Stensen became a Catholic. Such a convert was received most willingly by the Church; he and by proving that the heart is a muscle; later he wrote a book was appointed Bishop of Titiopolis in Greece, and as Vicar Apostolic to the northern nations he traveled from place to place on a tour of proselytism. The nerves of the heart had never been satisfactorily delineated; many thought that the coagulation of blood was due to its cooling, but was this really the case? Glisson claimed that irritability was a specific property of all organized tissue, but no one had proved it. Here were problems for the sagacious Stensen, but they no longer tempted him. Clad in bishop's robes, he walked other paths, sorrowing for the souls of heretics. The apostle of physiology became its apostate.

But neither Malpighi nor Stensen knew what the future had in store for the great Dane, and that day at Bologna they talked eagerly of many earthly subjects; among other things they discussed vision, but to Malpighi's regret it was only after his guest had departed that he saw in the eye of a screech-owl which he had opened laterally the inverted image on the retina—"trees, the house, all inverted, and whatever was on the right now came on the left."

In 1667 Malpighi received a letter which had been addressed to him at Messina, but had arrived after he left Sicily, and was forwarded to Bologna. It was from Henry Oldenburg, the Admirable Crichton of the Royal Society of London, whose versatility and urbanity, however, could not overcome his Bremenish name, and when it was discovered that he was corresponding with forty foreigners, Lord Arlington wrote a little note: "Warrant to seize the person of Henry Oldenburg for dangerous designes and practises, and to convey him to the Tower." But within a few months the government seemed convinced that

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Oldenburg's correspondence men like Spinoza, Leeuwenhoek, Stensen, Swammerdam and Malpighi contained nothing especially dangerous, and he was released, and the Royal Society resumed its meetings. Oldenburg, in his letter to Malpighi, expressed the Royal Society's appreciation of his worth, and invited him to correspond with them on plants, minerals and insects—especially the silk-worm.

The origin of the Royal Society of London, like the origin of almost everything else, is involved in obscurity, but it is an historic fact that it was chartered in 1662 by Charles the Second —the solitary good act of the sovereign who made adultery a duty, and sold his country to Louis XIV and his soul to perfidy.

Who shall account for the remarkable growth of science in England at this time? What connection is there between a nation's political position and its scientific achievements? The student of the seventeenth century will be puzzled for an answer. Germany was despoiled by the Thirty Years' War and fell behind in culture, while Holland, which had thrown off the ever-accursed yoke of Spain, could point to many glorious discoveries; but on the other hand Italy was only a "geographical expression"—the property of Bourbon and Hapsburg, two families that have brought much misery to the human race—and yet at this time Italy produced several of her greatest men of science; while France, which was at the height of its commercial and military power, brought forth that barren medicine which deserved and excited the satire of Moliere. Learning is believed to flourish best in the gardens of quietude, but the country that decapitated its king and established the great Commonwealth, only to be later ravished by the Restoration, to say nothing of the Great Plague and the Great Fire, will not be accused of enjoying calmness. Possibly the re-establishment of political tyranny by the son of Charles the First made men's minds seek an outlet in other directions, but whatever the explanation may be, the fact remains that science became epidemic in London.

The poet Cowley wrote an Ode to the Royal Society, and Dryden apostrophized it, declaring it would soon enable us to converse with our celestial neighbors:

> **Then we upon the globe's last verge shall go,**
> **And view the ocean leaning on the sky;**
> **From thence our rolling neighbors we shall know,**
> **And on the lunar world securely pry.**

Thomas Hobbes became a court favorite. To show the taste of the times it may be mentioned that John Locke, the philosopher.

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physician, received for the *Conduct Concerning the Human Understanding,* which is hardly more than a pamphlet, thrice the amount that Milton received for *Paradise Lost,* a poem of over 10,000 lines.

The Duke of Buckingham worshipped the trinity of wine, women, and chemistry. The valiant Prince Rupert dropped molten glass into cold water, thereby inventing the brittle curiosity that has since been known as Prince Rupert's Drops. The Duchess of Newcastle came to one of the Society's meetings, and for her benefit the Fellows weighed a large receiver from which the air had been exhausted, and after placing it on a scale the air was allowed to enter—and the container weighed more; then they took two cool liquids and mixed them together, and to the delight of Her Grace the fluid became hot.

Charles the Second fitted up a laboratory at Whitehall, and performed amateurish experiments with mercury and phosphorus. In Pepys' *Diary* we find this: "Charles the Second saw Dr. Clarke and Mr. Pierce dissect two bodies, a man and a woman, with which his majesty was highly pleased." But although the Merry Monarch styled himself the Founder and Patron of the Royal Society, he never once visited its meeting-rooms, and at times when its finances were so low that it was about to disband, he offered no pecuniary aid, but spent much money on the caprices of his mistresses. During the last ten or fifteen years of his reign he did not seem to be aware that the Society existed, and held no communication with it whatsoever. That the Society resented this attitude of indifference need occasion no surprise; when the king died, the Royal Society did not adjourn, and no record of his decease is to be found in the minutes. Nature never intended a Stuart to be anything except indecent.

To the courtiers, an experiment was a fad; to the real members of the Society it was a passion. A more wide-awake group of men never gathered together. Whenever they heard of a new book, they read it; whenever they heard of a new experiment, they repeated it. They discussed their observations of Saturn and the history of wax-candles; they were interested in a new star and in the development of clothing; they inquired about Africa and about the man who lived without a spleen; they investigated earthquakes and a double goose-egg; they asked about a key to the Chinese language and whether the venereal disease existed in Numidia; they studied magnetism and the heart of an eel; they paid attention to the ebb and flow of the sea and to the corroding effects of cider on a knife; they were

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attracted by a new classification of birds and by an individual who could remain three hours under water. Their activity in every-ology was feverish, and although some of their experiments, as reviving drowned animals, and transfusing blood from dog to dog, and from sheep to man, produced more wonder than results, both by the universality of their sympathies and by the splendor of their discoveries, the Royal Society of London became the foremost of scientific associations.

Malpighi, of course, had often heard of the Royal Society, and was glad to comply with their request; in 1688 he began to cultivate and study the silk-worm. He hatched them, watching them day by day, dissecting them at various stages. He described their external form, musculature, tracheae, nerves, heart, intestines, their habits, generative organs, egg-laying and silk-spinning apparatus—and he drew pictures of all that he saw. To prove the respiratory nature of the tracheae, he clogged up these organs with a drop of oil or honey, and the animal died in convulsions—while a monk might say a paternoster. He compared the silk-worm with the locust, the pine-caterpillar and the firefly.

By the time he got through there was only one man who knew more about little creatures than Malpighi, and that was Jan Swammerdam, who corrected some of his mistakes. Ah, here was a character! After Jan Swammerdam graduated in medicine, his father insisted that he practise, but the boy was too much of a scientist for that. They quarreled, but it was the father who yielded. Jan Swammerdam never killed or cured a patient. But he observed the red-blood corpuscles before Malpighi, although his observation was not published until many years later; he discovered the valves of the lymphatics, and was the first to announce that a lung which has once drawn the breath of life will not sink in water; also, he described 3,000 species of insects. When Swammerdam drew the finer anatomy of a may-fly or a bee or a worm, it was the work of art in miniature, and its richness of detail and delicacy of craftsmanship made the drawings of others look like rude sketches. His patience had no limit; in summer he began his task at dawn, and worked in the open as long as he could see; in order not to interrupt the light he wore no hat, and paid no attention to the sweat that streamed down his face.

But there came an evil day for science and for Swammerdam—he read the books of Antoinette Bourignon. One would suppose that a noble intellect would turn in contempt from their irrational rant—frenzied statements unsupported by evidence, and logic that

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would have shamed naked aborigines. But the mind of Swammerdam succumbed to the mystic jargon; the woman convinced him of the sinfulness of science; he joined her fanatical sect, and for the remainder of his life repeated its delirious babble. The hand that had been so cunning no longer injected wax in the vessels of the queen bee; the works that he had written he did not publish, nor did they see print until he had long been dead; the long brass table, which Samuel Musschenbrock had made especially for him, and which had been so crowded with specimens for study and dissection, now stood empty and idle; upon it lay his scalpel unused—growing dull, like the brain of its owner. Jan Swammerdam, like another Stensen, became a lost leader of physiology.

Concerning his own work on the silk-worm, Malpighi has an interesting note:

I tried to show not only the external mutations but the relations and structure of the viscera. This was a most tedious and laborious task, and fatigued by months of toil I was seized with a fever and an inflammation of my eyes in the autumn. Still, notwithstanding these difficulties, there was a mental delight in this work—in finding so many and puzzling miracles of nature that I cannot describe them with my pen. My collected observations, with drawings, I sent in the beginning of the year 1669 to the Royal Society.

The Society was certainly gratified that such a work should be dedicated to them, and when Oldenburg proposed that Signor Malpighi be made a member, he was elected *nemine contradicente*, and Secretary Oldenburg had the pleasant duty of sending to his Italian friend a diploma in Latin, which being translated into English, reads:

Master Marcello Malpighi, most renowned for his knowledge of medicine and anatomy, physician and professor of Bologna, and professor in the University of Messina, has shown most clearly his great regard for this society and for the advancement of true philosophy, by his most excellent and learned contributions. Therefore, on March 4th, in regular session, this society unanimously elected the distinguished Malpighi a member, and as evidence we herewith set our seal upon this public record. Given, London, 1669, in the reign of Charles II, King of Great Britain, France and Ireland, and founder and patron of the society.

This was on the fourth of March, 1669, and on the twenty-first of October the Society received Malpighi's acknowledgements in a letter dated the fifteenth of July, for in those days Bologna was a long way from London.

The Society delegated Robert Hooke to peruse and report on Malpighi's discourse on the silk-worm, and at the next meeting Hooke declared that he found it very curious and elaborate,

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and well worth printing, and accordingly the presses of the Royal Society turned out *Dissertatio Epistolica de Bombyce.*

When we mention the name of Hooke, we utter one of the most amazing names in all the annals of science. As a child he was too frail to study for his father's profession—a parish minister. Later he was employed by the wealthy Robert Boyle, the foremost chemist of the age. After the great fire destroyed London, Hooke submitted a plan for the reconstruction of the city, and although the model of Sir Christopher Wren was fianlly adopted, Hooke's idea was much admired, and when a new London was rising out of the ashes, Hooke's services were constantly in demand as a surveyor and builder, an occupation which netted him quite a fortune.

Hooke was early appointed curator of the Royal Society, his duty being to perform experiments, and so inexhaustible were his intellectual resources that for several years he announced new discoveries at almost every meeting. To whatever path of science we turn, in the vanguard we will find the footsteps of Robert Hooke. He was the greatest of the English microscopists, and his *Micrographia,* published in 1667, contained the first description and drawings of the biologic cell. He was the only man of his century who knew the art of auscultation—he listened to the voice of the heart and lungs. He made a crucial experiment in respiration; opening the chest of a dog and puncturing the lungs, he kept the animal alive by blowing a bellow over the opened thorax, thus demonstrating that the essential requirement of respiration is not movement of the lungs, but a supply of fresh air. He was a wizard in mechanics, and his inventions in flying machines, air-pumps, watches, microscopes, telescopes, and meteorological instruments were almost countless. With equal ease and ingenuity he could speculate on the movements of heavenly bodies, and make experiments with a bubble of soap and water.

Those who came to see Hooke, attracted by his fame, must have been surprised at his appearance; he had a crooked figure with shrunken limbs, and his uncombed hair fell like a shaggy mane over an ashen countenance—and he grew smaller and more deformed with the years. His character was as unprepossessing as his body; he was too miserly to be immoral, but he was crabbed, sour, jealous, vain and morbid. All this must be admitted, but behind those unfriendly eyes and dishevelled locks burnt the immortal fire of genius.

Hooke was not satisfied to make only half the discoveries of his age—he claimed also the other half. That is why his con-

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temporary, Sir Thomas Molyneux, wrote of him: "Hooke, the most ill-natured, conceited man in the world, hated and despised by most of the Royal Society, pretending to have all other inventions, when once discovered by their authors to the world." Hooke was indeed the gadfly of the Society, stinging even the lofty Newton into exasperation. When the *Principia* was in process of publication—at the personal expense of Sir Edmund Halley, as the Royal Society had not sufficient funds at this time—Hooke so insistently proclaimed that part of the work was stolen from him that Newton determined to suppress a third of the volume, and would have done so, had it not been for the earnest and indignant remonstrances of Halley. Later, when Newton completed *Optics*, he ascertained that Hooke had claims upon it, and he refused to publish it during the lifetime of the curator; he kept his work in manuscript until the bitter tongue of Robert Hooke was silenced forever. Hooke had existed so sordidly as practically to deny himself the necessities of life, but upon his death several thousand pounds were found in an old iron chest whose rusty key had been unused for thirty years. His precious money he had kept to himself—only his genius he had flung into the gutters of the world.

Malpighi's next venture was in the vegetable kingdom. He had been interested in plants and trees at least since that day in Messina, when strolling with Giacomo Ruffi in the Visconte's garden, the friends found their path blocked by the overhanging branch of a chestnut-tree; Malpighi snapped and broke the bough; the way was cleared, but Malpighi did not walk on; he stood there, looking at the vascular bundles which jutted from the fractured stem. That moment a botanist was born.

After that Malpighi watched the growth of many plants. He studied the phanerogams and the pteridophyta, the rusts and smuts, the sporangia and the mosses, mucor and other moulds. He made drawings and examinations of wood and bark, of medullary rays and tracheid vessels, of sclerenchyma and rings. But Malpighi was not content to deal only with the architecture of plants; he tried to explain their physiology and their laws of development. His views on the function of leaves in nutrition were correct. He was among the first to detect sexual differences in plants. He was the first to describe the tubercles that are produced by nitrifying bacteria on the roots of legumes. He worked out the development of ovum into seed, and of ovary into fruit. Malpighi's *Idea Anatomes Plantarum* was presented to the Royal Society in 1671, and the first sketch of it was read

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just as Nehemiah Grew's work on the same subject came from the press, and thus the names of the Englishman and the Italian are inseparably linked as the founders of plant morphology.

Malpighi next turned his sagacious eye upon the chick. Now the chick is an humble creature—the barnyard is its home and a worm its delicacy—but Malpighi made the chick famous; with it he created the science of embryology. He floated off the embryo in water and spread it on a glass slide, viewing the developing organs under his microscope. He described the changes he observed hour by hour. He saw and drew the formation of and closure of the medullary groove, the primitive metameres, the formation of the cerebral vesicles, the appearance of the optic vesicles with their stalk, the development of the heart from a single bent tube to the arrangement of auricles and ventricles and aortic arches—and generation after generation of medical students have followed his eye and drawn as he has drawn. In 1672 Malphighi sent this work, in two parts, to the Royal Society —*De Formations Pulli in Ova*, in February, and *De Ovo Incubatio*, in October. When the Fellows read it, they read the life-history of the chick; from the beginning until it is hatched, from the time that "the little opaque spot in the egg grew into a living, breathing, feathered bird."

Malpighi was now forty-four years of age, and was to do no more great work—but he rested on fadeless laurels. Even during his own lifetime, his name was honored wherever science was known. He saw his books published, not only in Bologna, but in London, Venice, Copenhagen, Leyden, Frankfort, Naples, Amsterdam, Paris and Geneva. Among his pupils were Baglivi, whose epigrams deserve to rank with those of Henri de Mondeville; and Lancisi, who demonstrated the syphilitic etiology of aneurism; and Valsalva, whose name is preserved in Valsalva's sinus, and whose method of inflating the middle ear is still used.

The inoffensive Malpighi did not come into conflict with church or state, although the blood of the sixteenth century martyrs, Servetus and Dolet and Pierre Ramus, had not yet fertilized the tree of intellectual tolerance. For the seventeenth century was ushered in with the flames that consumed Giordano Bruno; two decades later, the tongue was torn from the mouth of the valiant Vanini, and after being strangled at the stake, he was burnt; on bended knees, aged and noble Galileo was forced to recant the truth; the learned Thomasius had to flee for his life; and the fanatical Jews, not to be outdone by their co-religionists, sent Baruch Spinoza into exile, and drove Uriel Acosta to

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suicide. But fortunately for Malpighi, the sacerdotalists did not find histology heretical, nor were they frightened by the dissertation on the silkworm or by the study of the chick in the egg.

But it must not be thought that Malpighi's new ideas went altogether unchallenged. As early as 1665 the obscurantist Michele Liparo wrote a violent tract entitled *Il Triodo dei Galenici,* which brought forth a response from Malpighi—*Il Apologia dei Moderni.* One of Malpighi's own pupils, Mini, backslided to Galenism, and lambasted his former master with *Medicus Igne non Cultro Anatomicus.* In September, 1687, his hereditary enemy, Professor J. Hieronymo Sbaraglia, attacked him with *De Recentiorum Medicorum Studio, Dissertatio Epistolaris ad Amicum.* His arguments have been thus summarized:

Of what use is the knowledge of the structure of the lung and the streaming of blood through it? Everyone knows that animals breathe, but no one knows why, and it may be said even that in this modern seventeenth century, with all this new knowledge at our command, we are not even quite as successful in curing pneumonia as were the fathers of old. Everyone thought, until the work of Wirsung, that the pancreas was just a cushion to support the stomach. What better off are we to know that it has a duct? Above all, of what use to cut up plants and study the hatching of eggs? Can we cure the troubles of women, knowing how the hatching of eggs goes on?

Then came "the most unkindest cut of all"—Borelli denounced him. In his Autobiography Malphighi refers to the matter:

You will wonder, Reader, when I tell you that the most learned Giovanni Alfonso Borelli, whom I a little while back spoke of as most anxious that my Letters should be published, now breaks out into opposition to and severe criticism of my views. The reason which has led him to do this is because the literary intercourse which existed between us having been broken off, he became so inflamed with anger against me and mine that in the book which he composed in his last declining years, namely, the one on the movements of animals, he seized the opportunity of disproving my opinions. In this book, he, without mentioning my name, attacks with many arguments the use assigned by me to the lungs.

In 1680 the Royal Society received another package from Malpighi, but it was not a new manuscript—it was his portrait, done in oil, by Tabor. This is the most attractive of his likenesses, for while it exhibits his serious and melancholy countenance, the sick lines of his face do not show with the pathologic vividness of some of his other portraits. That the Royal Society framed it is evident from a letter which Sir Thomas Molyneux wrote to his brother at Dublin, in 1683:

At this meeting I had the opportunity of seeing several noted men, as Mr. Evelyn. Mr. Hooke, Mr. Isaac Newton, Dr. Tyson, Dr. Slare,

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etc. Round the room was hung the pictures of these men: Lord Brouncker, Bishop Wilkins, Gunter the mathematician; Signor Malpighi, sent by himself from Italy, and Mr. Hobbs. Over the chimney stood their own Arms.

For many years Malpighi had lived, during the summer at least, in his villa at Corticella, on the outskirts of Bologna, and here no doubt he expected to end his days. But in April, 1684, a fire leveled his cottage to the ground. This unfortunate event was witnessed by the British physician-traveler, Tancred Robinson:

> Just as left Bologna, I had a lamentable spectacle of Malpighi's house all in flames, occasioned by the negligence of his old wife. All his pictures, furniture, books and manuscripts were burnt. I saw him in the very heat of the calamity, and methought I never beheld so much Christian patience and philosophy in any man before, for he comforted his wife and condoled nothing but the loss of his papers.

But how keenly Malpighi felt the loss can be seen by this extract from a letter to Redi:

> I live, if it can be called life, in idleness, without other aim than to distract my grief. A chance fire in my house in the last month has burnt what little I had, my notes in manuscript, the microscopes and lenses—only one was saved and a short time afterward this was stolen from me with a little money. I must recognize in this the voice of heaven, the more that to my old ills there are added articular pains which fetter me close so that nothing remains to me but to study and enjoy as best I can the work of others.

Two years passed, and as the Royal Society received no further communications from Malpighi, they collected his former works, publishing his *Opera Omnia* in two volumes, in 1686; again two years went by without word from the great Italian, and growing anxious, the Royal Society wrote to him, telling him of the high esteem in which they held him, and asking for his most recent discoveries. Malpighi had been studying the lymphatic glands; he recognized that they formed a part of the lymphatic system, and described their distribution, consistence, form, color, relation to blood-vessels and pathologic changes, such as tuberculosis of the glands. Accordingly Malpighi sent them *Epistola de Glandularum Conglobatarum Structura*, which the Society published in 1689.

Not long afterwards the tranquil tenor of Malpighi's life was disturbed by a startling request: Cardinal Pignatelli, of Bologna, became Pope Innocent XII, in 1691, and requested Malpighi to be his personal physician. A man of intrigue, who would rather play politics than pursue truth, would have accepted this offer gladly, but it could not tempt the philosopher of sixty-three, who even in more ambitious days preferred the solitude of science to

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the flummery of courts. But Popes did not issue invitations in order to have them rejected. The seventeenth century was notorious for its professional poisoners, both male and female, particularly in Italy, and it was well for a Pope to have a reliable physician. Innocent XII wanted Malpighi, and Malpighi had to come.

Of his life in Rome the autobiography of Malphighi says nothing, though it was noted that his health grew worse from the first year of his residence there. In 1693 the Royal Society, through its Secretary Waller, congratulated Malpighi upon his high position, but illness was penning a more fatal message. The following summer he had an apoplectic attack, and he knew that the sands of his life were running fast through the glass of time.

He hurried to put his notes in order for the Royal Society, and while thus engaged he suffered his last calamity—his wife died. They had been married for forty years, and the union, though it was fruitless, was happy; Malpighi's house was a childless house—no infants laughed and played there, no childish voice sounded through the nursery, stirring the parental heart; under its roof no boys and girls developed into men and women—but in peace and love Marcello and Francesco had grown old and gray through the years, and now that the man was left alone he felt himself lost. Sixty-six is not so old, and yet the frail Malpighi had already outlived most of his contemporaries. Borelli—peace to his truculent soul!—had died of pleurisy; Descartes, Pecquet, Sylvius, Willis, Boyle, Wiseman and Sydenham were all dead; many workers who were born after Malpighi had already preceded him to the grave; gone were Stensen, Swammerdam, de Graaf, Mayow and Lower.

As he lay on his death-bed Malpighi signed his *Posthumous Works,* and directed that they be delivered to the Royal Society, which was done by Buonfigluoli. In the autumn the end came—November the twenty-ninth, 1694. Baglivi, aided by Lancisi, performed the autousy, and both wrote detailed accounts of the findings.

Then the body of Malpighi was embalmed and brought back to Bologna, to be buried in the Church of San Giorgio. So closed the chapter of a spacious life, but before Death signed finis to the last page, the man had written across the scroll of science several of the opening passages of modern anatomy, modern physiology, modern botany, modern histology, and modern embryology.

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Urology and Sexology
Continuing the
AMERICAN JOURNAL OF UROLOGY AND SEXOLOGY

THE MODERN TREATMENT OF VENEREAL DISEASE

III—Complications of Acute Gonorrheal Urethritis

By Abr. L. Wolbarst, M.D.,

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There is nothing essentially inherent in the nature of gonorrhea to bring on complications; this is well demonstrated by their frequency in the hands of some practitioners and their rarity in the hands of others. We therefore believe that the presence of complications depends not so much on the disease itself as upon the conduct of the patient and his mode of living, the method of treatment adopted, and the strenuousness with which this treatment is applied. It goes without saying that the personal equation is an important factor; what might bring on a serious complication in one man may have no effect whatever in another, and vice versa. However, the fact remains undisputed that certain methods of treatment bring with them an unduly large proportion of complications. My own observations confirm this view, and I believe it is not so largely the fault of the remedies, per se, as the faulty methods of their administration. Over-treatment, quantitatively and qualitatively, does much more damage than the gonococci. Our remedies are too strong, they are employed too frequently, and their application is too often attended with an exhibition of physical strength that is neither pleasant nor profitable to the patient.

The most common complication of acute gonorrheal urethritis, if it really may be called a complication, is acute prostatitis. This is an extension of the inflammation to the body of the prostate from the posterior urethra, by way of the prostatic ducts.

I believe that few, if any, cases of acute posterior urethritis escape without more or less prostatic involvement; and in this same spirit in which we consider posterior urethritis an extension and not a complication of acute gonorrhea, so should we consider acute prostatitis an extension rather than a complication of posterior urethritis.

Anything that tends to increase the severity of an acute posterior gonorrhea is an exciting cause in the development of

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severe acute prostatitis. A most important predisposing factor in this extension is the presence of a pre-existing chronic catarrhal congestion of the prostate, due to sexual excess, masturbation or alcoholism, irritation resulting from bicycling, horseback riding, automobiling and even railroad car riding.

We recognize three fairly distinct types of acute prostatitis—catarrhal, follicular and parenchymatous. The mild catarrhal form, I believe, is seen in almost every case of acute gonorrhea, but it usually presents no symptoms that call attention to its presence. When, however, in the course of acute posterior urethritis the treatment is such as to enhance the inflammatory process, one might reasonably anticipate a well marked prostatitis. It has been suggested that when acute gonorrheal prostatitis occurs during the progress of a conservatively and properly managed case of gonorrhea, the presence of a slumbering and previously existing tuberculous condition may be suspected.

The passage of catheters, and even sudden exposure to cold or wet, may bring on a severe attack of prostatitis; in my opinion, the most common cause is "too much treatment."

The catarrhal type is the mildest, and its presence can be expected in every case of acute posterior urethritis. It is characterized by a superficial inflammation of the prostatic ducts and glands, consequent upon an attack by the advancing hosts of gonococci. The inflammatory process usually remains localized, especially in the gland region surrounding the verumontanum. The prostate proper is not involved. If the process does not subside, but advances in intensity, the suppuration and exfoliation continue, the glands and ducts become more or less choked with pus and detritus, and we have a follicular prostatitis. The orifices of the glands may become occluded, with the result that numerous small pseudo-abscesses form in the follicles. Frequently these pseudo-abscesses can be felt on rectal palpation as small, hard and tender elevations, resembling a seed. With the passing of the acute inflammation, the exudation may become absorbed, and the organ and its glands may return to their normal state.

When, however, the acute inflammation continues, resolution does not take place. A number of glands break down and the inflammatory process attacks the substance of the organ. This gives us a true parenchymatous prostatitis—the forerunner of prostatic abscess. The organ becomes highly congested, infiltrated, swollen and edematous, entirely or in part. The broken-

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down glands may form small abscesses, which in turn coalesce to form larger abscesses. The intracellular connective tissue is more or less injured and destroyed. Per rectum, the organ feels hot and tender, and very large, sometimes apparently filling the entire lower bowel.

When the acute inflammation subsides, resolution occurs, and this marks the extent of recovery. It is possible, though not usual, for the prostate to rid itself of the entire inflammatory process, and to return to its normal condition.

If resolution does not occur completely, the process remains quiet and inactive for a time, giving rise to a new set of symptoms that characterize the presence of chronic prostatitis. If, however, the acute inflammation continues to advance, the process leads to acute suppuration, and we have a prostatic abscess to deal with.

The clinical symptoms of acute prostatitis usually depend on the extent and severity of the inflammatory process. The catarrhal and follicular varieties do not offer any particular symptoms by which their presence can be determined in acute gonorrhea, except by a general increase in the already existing inflammation of the posterior urethra. There is an increased sensation of pain and discomfort in the urethra and perineum, more frequent and painful micturition, terminal hematuria, painful defecation and chordee. Also pains referred to the groins and thighs. Examination per rectum does not reveal any very considerable or only a moderate enlargement or tenderness, and the seminal vesicles, which reflect the prostatic condition, are not appreciably abnormal. The urine is cloudy, depending on the quantity of pus secreted. A positive diagnosis of acute catarrhal or follicular prostatitis based solely on its physical manifestations is therefore impossible.

In parenchymatous prostatitis, however, when the inflammation involves the deeper gland structures as well as the parenchyma of the organ, the diagnosis is readily made. Examination per rectum reveals a considerable enlargement of the prostate, sometimes filling the entire lower bowel and obstructing the passage of solid feces. There is a considerable increase in the pain and perineal fullness; urination is frequent and often bloody, and accompanied by exquisite pain during and after the act. Occasionally more or less complete retention adds to the distress. The patient complains of a large pulsating foreign body in the rectum. Chills may precede or follow the onset of these symptoms. Persistent, painful priapism is also quite common, especially at night.

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These symptoms increase steadily in severity with the advance of the inflammation, and soon general constitutional symptoms indicate the unmistakable presence of an acute septic infection.

There may be a high febrile movement, the patient feels alternately hot and cold, and looks very sick. The rectal examination is more painful than previously, and the entrance to the bowel is blocked by this great, hot, tender, pulsating mass, apparently as big as the patient's head. Constipation is the rule; defecation is so painful as to be almost impossible. This condition is easily diagnosed, but the greatest care must be taken lest we fail to appreciate the moment when suppuration takes place in some part of the gland and a prostatic abscess has resulted.

Acute Periprostatitis; Periprostatic Cellulitis; Cellulitis in the Male.—When the prostatic inflammation reaches a very high degree, the process often extends beyond the limits of the organ proper, and results in an exudation into the connective tissues around and about the gland. This is especially frequent with prostatic abscess, but less so with parenchymatous prostatitis. Subjectively the symptoms are those of the coexisting abscess or inflammation, but they may persist even after the abscess has ruptured or been incised. Per rectum, the finger runs into a mass of soft, boggy, inflammatory edema, completely or partly surrounding the prostate and vesicles and obliterating their outlines. The lower bowel is more or less completely filled with this boggy mass, which in some places may show signs of fluctuation. The diagnosis is made solely by rectal examination.

Treatment.—The treatment of acute gonorrheal prostatitis depends in a great measure upon the degree and severity of the inflammation. The mild catarrhal and follicular forms of prostatitis demand no special therapy because they present no special symptoms. These forms of prostatitis respond fully to any well-directed treatment of the posterior urethritis. Treatment should be symptomatic, and at the same time so directed as to control as far as possible the gonorrheal infection in the urethra.

In those cases in which the patient has been made the victim of over zealous treatment, it is imperative that all local measures be suspended. In such cases not only will the prostatitis be benefitted, but the urethritis itself will diminish in severity under the relief thus afforded. When, however, there has been neither excessive nor too vigorous treatment, but, on the other hand, the

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treatment appears to hold the inflammation under control, it is wise to continue it, with the proviso that the greatest watchfulness be observed in its administration.

Mild, intravesical irrigations, carefully made with the large Carlton syringe, are of decided value in the treatment of acute prostatitis. The important thing is proper technic. The irrigation must be administered with the utmost gentleness and intelligence, and the solution used must be the weakest possible consistent with efficacy. Likewise, the use of the new silver salts (as described in the preceding article) is also an effective agent in the treatment of this condition. In short, whatever is good for the urethritis will of necessity be good for the prostatitis.

Prostatitis tends to undergo resolution, in spite of any or no treatment. All we have to do is to encourage this tendency by diminishing the infection and reducing the existing inflammation in the organ. The local urethral treatment is the first step in this direction. Light diet, rest in bed, free movement of the bowels and the local application of moist heat are important measures of relief. The heat may be applied to the perineum either by means of the hot water bag or, better still, through frequently repeated sitzbaths. Very often the application of heat per rectal douche will be found grateful to the patient and of decided value in dimishing the local congestion and inflammation. Occasionally, however, the heat is not productive either of comfort or benefit, and in these cases cold will be found more useful. The fluid is brought into contact with the surface of the prostate through a double current rectal tube, Kemp, Chetwood, or the author's model, used two or three times a day. The douche is followed by a rectal suppository containing extract of opium ½ to 1 gr., and extract of belladonna ½ gr., to which the addition of ichthyol, 5 to 10 minims, will often be found advantageous. The ichthyol sometimes produces extreme irritation, and should be withdrawn if the suppository does not prove immediately effective. For this reason the ichthyol is best administered separately.

If urinary retention supervenes, the bladder should be emptied by a small-calibered soft catheter, and thoroughly irrigated with a mild antiseptic solution.

A hot solution of silver nitrate 1-5000 will be found wonderfully effective at times. If for any reason the catheterization cannot be performed, perineal section with permanent bladder

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drainage in suprapubic function will have to be done to relieve the retention.

Internally, the alkalin solutions, the balsamics and the urinary antiseptics, so-called, have their respective fields of usefulness in condition.

The internal administration of salicylic acid is very useful at times. At best we can only hope to make the patient as comfortable as possible during the acute inflammatory period, and to this end our therapeutics should be directed.

In addition to the local treatment, it is wise to employ vaccines. Excellent results will frequently be obtained. Some prefer an autogenous vaccine, but my personal preference is for a polyvalent mixed vaccine, giving fairly large doses as frequently repeated as the reaction will permit.

At the same time massage of the prostate, if cautiously and most gently applied, may prove most serviceable. The finger should come in contact with the hot and tender prostate as lightly as possible, and only the gentlest pressure applied. Anything else is not only exquisitely painful, but absolutely harmful. This should be done every two or three days, if the patient tolerates it well; if not it should be stopped entirely. Each massage should be preceded by an intravesical irrigation, using preferably silver nitrate 1-10,000 or 1-15,000.

If the prostate is hard and not very tender, massage may be performed to advantage every day.

Another decidedly effective measure in these acute conditions is the instillation of a ½% solution of silver nitrate into the deep urethra by means of the Ultzmann deep syringe. While this is most effective at times, it should be used most cautiously and its effects watched carefully, for it is capable of doing much harm if improperly used.

A novel suggestion has been made recently by Belfield which has considerable merit. He recommends vasotomy in posterior urethritis not only as a curative measure for the prostatic involvement, but also as a prophylactic against the development of prostatic abscess, acute epididymitis and arthritis. I have no doubt that a widespread employment of vasotomy in this condition would eliminate a large percentage of complications and bring about an earlier and more certain cure.

Acute Seminal Vesiculitis; Spermato-cystitis; Perivesiculitis.—This occurs so frequently in combination with acute prostatitis, and the symptoms of both are so fused together as

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to render a differential diagnosis not only impossible but unnecessary—especially as its presence calls for no special treatment. The diagnosis is made per rectum. Occasionally cases are seen in which the symptoms are so grave as to suggest the existence of peritonitis or a perforating appendicitis. On either side of the prostate in well-defined cases, a sausage-like mass, bearing a strong resemblance to a finger in size and shape, can be felt diverging from the median line. At times it is impossible to identify them at all, but one is almost always able to distinguish at least that portion of the vesicles nearest the prostate, just as it emerges from that organ. When considerable periprostatitis exists, the vesicles cannot be isolated from the general indistinct mass.

The symptoms are those of the concurrent acute prostatitis, and the treatment is the same. Seminal vesiculitis rarely proceeds to suppuration; when this happens, the symptoms are all enhanced, and the patient suffers severely from the infection; relief is secured when the abscess ruptures. The most favorable termination is a spontaneous rupture into the urethra. The rupture may also take place into the rectum. Seminal vesiculitis like prostatitis, has a natural tendency to resolution. Total resolution, however, is very unusual; in most cases there is sufficient infiltration and tumefaction left to require attention when the subacute stage gradually becomes chronic. Not infrequently the infection persists in the seminal vesicles as a chronic pus-focus, giving rise to various phenomena, principally arthritis and the so-called neurasthenic symptoms. Belfield has very aptly designated these infected sacs, "pus tubes in the male."

Prostatic Abscess.—Gonorrheal prostatic abscess represents the culmination of the inflammatory process in the organ; it is, in fact, nothing more than a severe acute prostatitis, which, instead of responding to its natural tendency to undergo resolution, has increased in intensity and ended in suppuration.

The abscess may be single, or there may be a number of abscesses, located anywhere in the organ; they may be small or large. They may also fuse to form one very large abscess, with considerable destruction of tissue; there may be a number of miliary abscesses, scattered throughout the prostate, or the abscess may be periprostatic—that is to say, involving the surrounding infiltrate, but leaving the prostate proper intact. Many so-called prostatic abscesses are really periurethral abscesses, situated close to the prostate and yet not within its substance.

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The symptoms of all prostatic suppurations are much alike. They are characterized, in brief, by those of acute prostatitis carried to their maximum intensity, in addition to which is the diagnostic symptom of fluctuation, felt by the finger in the rectum. The patient is extremely sick and presents the typical picture of acute septic inflammation. Fluctuation cannot always be distinctly made out, because the pus-area may be deep-seated and beyond the reach of the examining finger. The diagnosis of prostatic abscess can be made nevertheless, even in the absence of fluctuation, when the symptoms reach an inordinately high degree, with marked general toxic phenomena, hot and pulsating prostate and high temperature, with chills.

Occasionally, even with symptoms of moderate severity, the presence of abscess is not suspected, and the diagnosis is not made until the abscess ruptures either into the urethra or the rectum. Where there is any doubt as to the presence of pus in the prostate, and the general symptoms are strongly suggestive of suppuration, it is not only expedient but necessary to secure this information, either by incision or by puncture.

Treatment.—The diagnosis of abscess having been made, surgical intervention should be resorted to at the earliest opportunity, so as to save the gland from inevitable further damage. The incision should reach the point of suppuration. If the abscess points toward the perineum, a perineal incision should be made. Puncture and aspiration through the perineum has been attempted with some measure of success. If fluctuation is felt per rectum, and the abscess seems to point in that direction, it may be opened from the rectum, care being taken to prevent infection from the bowel.

Spontaneous rupture of a prostatic abscess is of frequent occurrence, usually opening into the urethra, but sometimes into the rectum. The patient is made aware of the occurrence by the appearance of a profuse discharge at the urethra or at the anus, associated with a marked diminution in the pain and tension previously felt in the prostatic region.

The *prognosis* depends more or less on the size of the abscess. A small or moderately sized abscess closes spontaneously, and recovery is prompt; a large abscess, however, presents mechanical difficulties to quick closure, and offers considerable opportunity for the formation of an unhealing, granulating cavity or sinus, with the possible development of pyemia and urinary infiltration. Or the spontaneous opening may close up quickly,

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before all the pus has escaped, thereby stimulating the formation of new abscess openings for the pus to make its exit. Rarely the abscess opens directly into the bladder. If spontaneous rupture takes place into the rectum and the urethra simultaneously, there is a strong likelihood of the development of a urethro-rectal fistula, with the possibility of urethral and bladder infection by rectal matter. The prognosis after operation is always better than that without it.

Periurethral Abscess: Perifolliculitis.—When a number of the urethral glands are attacked by the gonorrheal infection, they can be felt from without as small, hard and tender masses. When they fuse together, they may cause an abscess, which from without somewhat resembles a chancre, except that it is tender and painful to the touch. Frequently pus can be produced at the meatus by squeezing these bodies. Gonococci will be found in this pus.

The treatment is expectant, along surgical lines. Sometimes the abscess undergoes resolution and the parts return to their normal condition; usually an incision and drainage are required. If the external incision is not too big there is little danger of periurethral fistula.

IV—Epididymitis; Gonorrheal Arthritis

Epididymitis: Epididymo-Orchitis.—This is by far the most frequent of all the complications of acute male gonorrhea. It is also, perhaps, the most important, because of its remote consequences. Casper stated that 20 per cent. of cases develop epididymitis; Taylor believed that 3 per cent. is a high figure. It may occur at any time during the existence of an acute or chronic gonorrhea, but it is most apt to develop in the second or third week of the disease, when the urethritis is at its maximum intensity. In some men there is a distinct tendency to recurrence long after the urethral symptoms have disappeared.

The exact causes of the development of acute epididymitis cannot be stated with certainty. This complication occurs in patients who receive local treatment and in those who are treated expectantly by internal medication, or who receive no treatment whatever. Strong injections roughly introduced into the deep urethra, passing a catheter into the bladder, and vigorous massage of the prostate certainly bring on epididymitis. The irrigation method of treatment (Janet) also is frequently responsible for this complication, when employed carelessly or roughly. The pressure of a large volume of water against the cut-off muscle

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during the height of an acute posterior urethritis seems to be capable of setting up sufficient irritation and reaction to cause an extension of the inflammation down to the epididymis. Neither are we certain that this fluid, under hydrostatic pressure, does not actually drive the gonococci into the prostatic glands, common ejaculatory duct, and vas deferens to the epididymis.

The best explanation of the development of an acute gonorrheal epididymitis is to be found in the anatomic structure of the parts involved. The inflammation is usually at its maximum intensity, involving the entire urethral tract; possibly the bladder trigone, too. The causes that have operated to maintain this increasingly high degree of inflammation, or additional exciting causes, continue to act, with the result that the inflammation, traveling along the lines of least resistance, finds its way into the common ejaculatory duct and thus passes into the vas deferens and down to the epididymis. In this way we can explain the development of acute epididymitis during the course of gonorrheal urethritis following sexual or alcoholic indulgence, nocturnal emissions, traumatism and excessive physical activity. All of these factors help to aggravate the already existing inflammation, and an extension into the epididymis is the consequence.

It is also possible that the infectious element may be carried to the epididymis by way of the lymphatic system, but the comparative rarity of inguinal bubo or systemic infection coincident with the development of the epididymitis, would seem to argue against this method of invasion.

Cases have been reported by careful observers (Neisser, Jadassohn) from which it would appear that the epididymis may be attacked without the apparent existence of posterior urethritis; but it is also possible that in these cases the bacteria which have reached the posterior urethra may have been carried away by the stream of urine, while those already in the ejaculatory duct are safe in this respect; or by the inflammation of the epididymis the catarrhal process in the posterior urethra may have been brought to an end for a time or finally, as also happens in the anterior urethra. Perhaps there is some association between this problem and the oft-repeated clinical observation, that an acute epididymitis not only clears the urine of pus, but cures the attack of gonorrhea. There seems to be no scientific reason to account for it, except possibly the fact that the gonococcus loses its vitality at 39 degrees C., and is totally destroyed at 40 degrees C. or over.

Another interesting point in this connection is the sudden

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clearing of the urine and cessation of the discharge in acute posterior urethritis a day or two in advance of the appearance of an acute epididymitis. I have seen this happen so often, as to convince me that there is some direct connection between the two.

Acute gonorrheal epididymitis never is seen alone; it is either accompanied by an inflammation of the corresponding testis (epididymo-orchitis), or by an inflammation of the vas deferens (deferenitis, funiculitis), or by both. The latter involvement, as a rule, does not make itself particularly apparent, being overshadowed by the exquisite painfulness of the epididymitis.

Epididymitis also is usually accompanied by an effusion of serum into the cavity of the tunica vaginalis (hydrocele), especially when the testis is also involved.

The epididymis in enlarged to many times its natural size, often attaining the size of a man's fist; it is hard and frequently nodular. Usually the tail is the portion most severely attacked; that it suffers the most lasting damage is evidenced by the permanent infiltrate, which remains for years after the acute onset. In a typical case the organ swells to such a considerable size as to cover the testis more or less completely, and our only guide in distinguishing between the two organs is the groove that separates them. The finger can trace this groove around the entire circumference of the testis, and in this way the size of the latter organ can be determined.

Occasionally the testis is inflamed, too, and we have a large, painful and tender organ, fused more or less with its epididymis in the inflammatory exudate. In the tunica vaginalis there is a variable amount of fluid. This fluid is absorbed, to a greater or less degree, in the process of resolution. Very often this is the nucleus of a chronic hydrocele.

The vas deferens is also thickened and inflamed. In some cases it is as big and hard as a lead pencil or a finger, and very tender. The entire spermatic cord may participate in this inflammation.

The diagnosis usually is made by the patient himself. He complains of pain in the epididymis or spermatic cord. The inflammation of the epididymis cannot be mistaken for anything else. The patient's attention may be called to the presence of a recurrence of a chronic gonorrhea by the development of an acute epididymitis. I have seen this many times.

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The first symptom is pain, usually located in the epididymis itself, or in the vas deferens as it emerges from the inguinal ring. This pain increases quickly and extends in area, until the entire corresponding half of the scrotal content is agonizingly painful and exquisitely tender to the touch. The general health soon suffers. There is usually a high fever, sometimes preceded by chills and sweating. Weakness and a sense of faintness soon follow, and the patient looks and feels very sick in a remarkably short time.

Even the most gentle examination of the organ is associated with excruciating pain and may cause the patient to faint.

While most patients take to bed, a considerable number find it possible to be up and about and do their customary work. Rarely the inflammation proceeds to suppuration, and an abscess results. The usual course of the inflammation, however, is run in from one to two weeks, after which period the pain and tenderness gradually disappear, the swelling recedes, and the organ resumes something of its normal appearance. Resolution may not take place entirely, and a considerably thickened and infiltrated organ may remain, with the tendency to more or less frequent recurrence.

The prognosis is good. This, however, refers particularly to the acute inflammation. The pain and swelling disappear, leaving a more or less damaged organ behind. The damage consists in most instances of an induration of the epididymis, which usually remains for life; but this induration does not necessarily interfere with the functional capacity of the testis on the diseased side, though atrophy of the testis often follows.

The most considerable damage consists of a thickening of the walls of the convoluted tube, which in turn narrows its lumen and results in an interference with the passage of spermatozoa from the testis to the seminal vesicles. The degree of interference is in direct proportion to the extent of obliteration in the tube. This is the most frequent cause of sterility in the male, and is the most important sequel of acute epididymitis. There is no interference with the sexual power; the spermatozoa in the seminal discharge are generally absent altogether producing azoospermia.

Painful testis, or testicular neuralgia, so-called, sometimes follows acute epididymitis. There seems to be a strong element of neurasthenia in these cases, but the pain is a real one, and very difficult to get rid of.

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A very important feature of epididymitis is the tendency to the later development of tuberculosis. An acute gonorrheal epididymitis occurring in men predisposed to tuberculosis undoubtedly tends to the development of a tuberculous focus in the indurated nodule which remains behind. Previous to its full development as a tuberculous focus it partakes of the attributes of a simple chronic inflammation, which some French writers have designated "pseudo-tuberculous."

When abscess of the epididymis follows the acute inflammation we have to deal with a superimposed extraneous infection, either by the tubercle bacilli or pus-germs. Usually occurring in tuberculous patients, these infections belong to the slow, chronic variety, with the production of sinuses and fistulas.

Another sequel of acute epididymitis is the occurrence of chronic hydrocele. This does not differ in any way from the usual hydrocele which follows trauma, or some unknown cause.

Treatment.—Mention has been made of the means that should be taken to prevent the occurrence of this complication. Prophylaxis should be considered imperative. Rest (physical and sexual), gentle and skilfully applied local treatment, a properly fitting suspensory bandage—all of these will contribute to prevent the occurrence of acute epididymitis.

Once it has supervened, we should aim to diminish its severity, shorten its duration, and avoid its sequels.

Within the past decade operative surgical measures have been applied to acute epididymitis with most gratifying results. The first step in this direction was puncture of the inflamed testis, the purpose being to relieve the pressure within the swollen tunica vaginalis. This was followed by the Hagner operation, which is the most efficient method at the present writing. The tunica vaginalis is opened at the junction of epididymis and testis. The fluid is evacuated and multiple punctures or one incision made in the epididymis through its fibrous covering. General or local anesthesia may be used, the former preferably. A drain is inserted and retained for a day or two. The wound is closed with sutures in the usual way.

Under this method the infiltration of the epididymis disappears much more quickly than by any other known method of treatment; the danger of permanent injury to the testis and epididymis is lessened; the danger of sterility likewise is much diminished.

In my personal experience this is the most effective treat-

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ment of acute epididymitis. The patient feels an almost immediate relief from pain, the high fever quickly returns to normal and the patient may leave his bed within a few days. The entire period of the inflammation is shortened considerably if this operation is performed early. I believe it should be done in every case, especially when the tension is severe and the presence of pus is suspected.

If for any reason surgical interference is not permitted, non-operative measures which have proved exceedingly useful must be adopted.

The primary indication is absolute rest in bed. In the majority of cases this need not be urged upon the sufferer. The pain and weakness are so severe that he takes to his bed voluntarily. After rest in bed, suspension or elevation of the inflamed organ, so as to remove the tension on the inflamed spermatic cord. A T-bandage, made sufficiently wide to include all the scrotal contents, will afford splendid relief. Much more effective is a shelf made of adhesive plaster, four to six inches wide, and adherent to the thighs. The testes rest on this shelf. The ordinary suspensory bandage is of little avail in this condition. The point of the matter is that the testes should be brought as high up as possible toward the umbilicus, and any arrangement that will bring about this end will bring relief.

Local applications should next be considered. Heat and cold both have their advocates, with the preponderance apparently in favor of the hot poultice. At least, if the heat is not the more effective, it is surely the more soothing of the two, and this probably accounts for its more frequent use. Cold is applied preferably in the form of a 2 per cent. solution of acetate of alum, or lead and opium wash, cooled with ice, and applied continuously, with interruptions of one-half hour every two hours. Direct application of the ice-bag is often painful, and gangrene may follow. In the vast majority of cases, however, the ice-bag is extremely useful in this condition.

Heat is best applied in the form of the poultice—preferably tobacco or linseed, or a combination of the two. This poultice is made by mixing one ounce of cut tobacco in about a half pint of hot water, bringing it to the boiling point and continually stirring it thoroughly. Sufficient ground flaxseed is then added to bring it to the consisstence of a poultice, and stirred up well with the tobacco. The mixture is now spread out on a piece of linen or fine muslin, about one-quarter to one-half inch in thickness. The surface of the poultice may be sprinkled with laudanum. It should

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be applied as hot as can be borne and changed as often as necessary. A piece of oiled-silk will conduce to cleanliness and also help to retain the heat longer than otherwise. If this poultice is employed in conjunction with a proper amount of elevation of the scrotum, ready relief of the pain and a rapid diminution of the inflammation can be expected.

It is well, after a few days' use of the poultice, or instead of it, to substitute an ointment containing guaiacol as the principal ingredient. It may be added that the local application of pure guaicol, with a camel's hair brush, once or twice, as soon as the inflammation makes itself manifest, will sometimes cause its abortion in a remarkably short time. When, however, the process has had time to extend over a considerable area of the epididymis, the pure guaicol will be found too strong and painful; it should preferably be used diluted with glycerin or lanolin (guaiacol 1, glycerin or lanolin 3), and applied continuously. This ointment, though very effective, is sometimes exceedingly painful and often produces an acute dermatitis that is very alarming to the patient. To avert this, it is well to combine the guaiacol with ichthyol and opium, as follows:

℞ Ichthyoli
Guaiacoli — ʻāā 3iss
Pulv. opii — 3iv-3vi
Petrolati or Lanolini — 3i M
Sig. Fiat unguentum.

With the application of this guaiacol ointment a fairly large percentage of patients will be able to be up and about during the entire period of the inflammation.

Magnesium sulphate solution has been successfully used in the following manner. A saturated solution of the salt in water is applied on fifteen to twenty layers of gauze. The solution is poured on the dressing every half hour, or as often as necessary to prevent drying. At the end of twenty-four hours the dressing is removed and the parts cleansed; if necessary, it is reapplied as before. I have employed it in some cases with very good result.

Strapping the testis is a favorite method of treatment, and deservedly so, if it is properly employed. It never should be applied during the first six or seven days of the attack, and only when its application is followed by quick relief should it be continued. The method of overlapping strips of adhesive plaster applied directly to the scrotal skin is effective, but it has decided disadvantages that should relegate it to the rear in favor of the method to be described. It has the disadvantage of being inelastic, thus requiring a new bandage from day to day as the swollen

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testis diminishes in size; it is applied to the raw, tender skin, causing abrasions and dermatitis, and its application is often painful. The preferable method consists of a strip of rubber bandage about eight inches long and two inches wide, to one end of which is attached a strip of adhesive plaster one inch wide and four inches long. The scrotum is gently lifted and the uninflamed testicle pushed out of the way. The inflamed organ is then encircled with the rubber bandage as tightly as the patient can bear it, and as the bandage is wrapped in place the adhesive plaster is brought around, and holds it fast. Absolutely the only precaution necessary is to get the swelling—*i. e.*, to make the adhesive plaster encircle the organ above its equator, for otherwise it will promptly slip off. The advantages of this bandage need not be enumerated, but the chief one is that it may be removed daily or every other day to be put on more tightly. This it is expedient to do. Also it sweats the scrotum, acting like a poultice.

Leeches applied to the scrotum have been recommended very highly by some writers. It is not maintained that they shorten the course of the attack, only that they quickly relieve the severe pain. Bleeding is apt to be excessive on account of the great vascularity of the scrotal tissues. Care should therefore be taken to control all bleeding points before the surgeon leaves his patient.

Internally, there are no special therapeutic agents that need be mentioned. The urine should be kept bland and unirritating, the bowels loose, and the fever and general malaise treated as usual. If these measures are adopted, the acute attack subsides, the swelling and pain pass off, and the patient is left with a more or less thickened and nodular epididymis, which slowly resolves down to the size of a bean or a small nut. And just as likely as not the urine has been cleared of its pus, the discharge has ceased, and the patient is considerably advanced toward recovery with his gonorrhea.

It is still a mooted question whether or not it is advisable to continue the local urethral treatment during the height of the inflammation of the epididymis. Unquestionably the parts require as much rest as we can give them; on the other hand, if treatment is applied gently and cautiously, there is not the slightest harm, in my experience, in continuing it so as to keep the urethral inflammation under control. An injection of weak argyrol (3 per cent.) or protargol (¼ per cent.) twice daily gently administered undoubtedly has a beneficial effect on the urethral inflammation even though the epididymis is inflamed. Of course, if it is apparent that the urethral treatment is exerting an un-

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favorable effect on the infectious process, it should be stopped immediately. In general, it may be said that this question must be left to the judgment of the physician in each individual case.

The question of the use of vaccines is also still undecided. I think it is well to employ them, because occasionally a case improves perceptibly under their use. In the vast majority of cases, however, vaccines do not seem to exert any appreciable influence in this condition.

Gonorrheal Arthritis (*Rheumatism*).—Next to epididymitis, the most common complication of gonorrhea is gonorrheal rheumatis, so-called. Properly speaking, this is a local manifestation of a general metastatic, systemic infection, the etiologic factors being the gonococcus (Neisser) and its toxins. It makes itself manifest during any stage of the gonorrheal attack, frequently during the subacute perod, occasionally in the acute stage; the favorite site is one or more of the joints.

Two distinct types of gonorrheal joint invasion are recognized. In the first the attack is confined to the synovial membrane of the joint, the surrounding tissues not participating in the inflammation. It is in this type of cases that the distressing ankylosis, so often encountered, is most apt to occur. There is considerable effusion within the capsule of the joint, the fluid varying from serum alone, in the mildest form, to a purulent or muco-purulent effusion in the severe cases. In these fluids the gonococcus will often be found, associated usually with pus-forming micro-organisms.

In the second or periarticular type of infection the synovia is not involved; the inflammation brings with it little or no intra-articular effusion, but is limited almost exclusively to an infiltration of periarticular tissues. The parts surrounding the joint are therefore edematous and infiltrated, the extent of the involvement being in proportion to the degree of the inflammation. In these cases the passing of the inflammation leaves behind it a more or less permanent stiffening and contracture of the attacked structures, particularly the fascias and tendons running to and from the joints.

The knee-joint is the one most frequently affected, the left side being, according to some observers, more often attacked than the right. Next in order of frequency comes the ankle-joint, followed by the wrists, fingers and toes. After the joints, the most common seats of the affection in the order of frequency are the synovial sheaths of tendons, the muscles, synovial bursæ and the nerves.

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In the purulent cases, the gonococcus infection is associated with an additional infection by pyogenic bacteria. The latter may enter the joint simultaneously with the gonococcus, thus constituting a primary mixed infection; or they may enter the joint later, this being a secondary mixed infection. In the severe cases the pyogenic bacteria not only predominate, but destroy the gonococci and we find a fluid in the joint in which gonococci are absent. The gonococcus often has been found in the blood and in ulcerations on the heart valves, in endocarditis. Even the most remote portions of the body—the eyes, nerves, pleura, tendon sheaths, muscles, periosteum and perichondrium—may be involved in the metastatic process.

It is well to remember that gonorrheal arthritis is not limited in its origin to urethral gonorrhea. Cases have been observed in which this complication has followed primary gonorrheal ophthalmia, and even ophthalmia neonatorum, thus proving that the gonococci, wherever they happen to be, may enter the general circulation and become localized elsewhere in the body.

Two or three per cent. of all cases of gonorrhea are complicatd by a gonorrheal arthritis. Certain individuals undoubtedly do show an idiosyncrasy toward this affection, and some develop arthritis with each attack or recurrence of gonorrheal urethritis.

Another interesting feature worthy of mention is the fact that it is not necessary for the patient to be exposed to colds, draughts, wet feet, etc., in order to develop the arthritis. Apparently, the mere presence of gonococci in an active stage is enough to set up an invasion in some distant part of the body, irrespective of all other causes. Neither does the gonorrheic with a rheumatic diathesis develop true rheumatism because of his gonorrhea; in fact, there seems to be no apparent connection whatever between gonorrhea and rheumatism, and the arthritis which develops with gonorrhea is not at all rheumatic.

Another point: Gonorrheal arthritis is unusual in women, though by no means rare.

The acute type comes on suddenly and without warning. It begins with a chill, moderate fever, ranging from 101 to 103 degrees, sometimes higher, full, strong pulse, diminished urinary secretions, a coated tongue, and severe pain. One or two joints may be involved; the swelling is marked and rapidly increases; the skin is deeply colored and tense, and exceedingly tender to the touch. The most striking symptom is pain, and this may be

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excruciating in severity. Movement of the joint enhances it markedly. These symptoms, indicating a severe local inflammation, continue for a few days, and then they subside somewhat. The affected joint is not very tender, though it is edematous and boggy, and if the parts are kept at perfect rest, much of the pain passes away.

However, in a fair percentage of cases, the acute onset now repeats itself. Chills return, the fever rises again, sweats appear, the pain increases, and the patient looks real sick again. This means that pyogenic germs have entered the joint and have become active, and the serum is being replaced by purulent fluid.

These symptoms gradually subside, the fluid may be resorbed and the joint restored to its normal state; but the tendency to recurrence at every outbreak of urethritis should be borne in mind.

During the arthritic attack, as a rule, the primary source of infection seems to abate somewhat in intensity, the discharge ceases entirely or partially, and the urine may even clear up more or less entirely. This improvement is, however, but temporary, and the former condition returns as soon as the acute arthritic symptoms pass off.

The chronic type of arthritis is far more insidious and dangerous. Without premonitory symptoms and without much pain, a hydrarthrosis develops slowly and gradually, the main symptoms being swelling of the joint and impairment of function. Ankylosis is apt to follow the inflammation (in this type of case). There is a marked yet gradual decline in the general health. indicative of a general systemic infection, characterized especially by loss of appetite and weight, anemia, general weakness and exhaustion, loss of muscle tone, heart palpitation and general malaise. Precordial pain often is present, and endocarditis may be found. As in the acute type, the urine is scanty and high colored, full of pus, and occasionally containing a high percentage of albumin.

This is the type of arthritis that usually follows recurrent attacks of gonorrhea, the passage of sounds into a urethra in which an acute inflammation is set up, or in process, or the employment of strong irritant injections resulting in severe reaction.

Plastic changes and ankylosis are apt to be the rule in this class of cases, unless its course is modified by early and effective treatment. It may take many months before the patient can return to his usual life.

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The diagnosis is not difficult in the average case. Given a primary gonorrheal inflammation in the urethra, any arthritis developing in the course of such a urethritis should at once be suspected of being gonorrheal in origin and nature. It should be differentiated from inflammatory rheumatism particularly. It is also well to look for an old gonorrheal urethritis in any suspicious case of joint inflammation that does not respond to the usual anti-rheumatic measures. It is surprising how many cases of ancient and unsuspected gonorrheal urethritis will be discovered in this way.

In the acute variety the diagnosis is made by a study of the symptom complex rather than by any particular symptom. In gonorrheal arthritis the fever is not so high, nor so irregular; the pain is as a rule less severe, especially after a few days, and it shows a greater tendency to subside under rest and local medication. If only one joint is involved, there may be an utter absence of reactional constitutional symptoms; if more than one, the new joints are affected consecutively, not all at the same time, and though new joints are attacked, those first involved continue as before; resolution is apt to be longer delayed; lactic acid sweating, so common in rheumatism, is absent, or of very short duration; sudden subsidence in one joint and equally sudden involvement of another, so often observed in rheumatism, is not seen in gonorrheal arthritis. The endocardium and pericardium, as also the pleura, are rarely involved in the inflammatory process, and lastly, the gonorrheal variety does not respond to the salicylates or aspirin as inflammatory rheumatism does.

The subacute and chronic variety should be particularly differentiated from tuberculosis, though this is at times not a simple matter. Both conditions have symptoms in common; thus there is a general decline in health, the temperature and pain are variable. But the diagnosis can be made on these points: The presence of an existing gonorrhea, acute or chronic; more than one joint is usually involved in this type—in tuberculosis rarely so; as a rule, there is more pain and tenderness; there is more marked swelling and discoloration, and there is a greater tendency to involvment of the tendons and fascia than in tuberculosis; in the latter disease there may be, and often is, a tuberculous history or lesions may be found elsewhere in the body; and finally tubercle bacilli may be found in the exudate, as against the presence of gonococci in arthritis of gonorrheal origin.

The prognosis of gonorrheal arthritis may be said to be favorable in the average case, though the probability of ankylosis

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and impairment of function is not a slight one. In severe cases permanent ankylosis, hydrarthrosis, and suppuration may supervene; usually, however, the inflammation subsides, slowly yet surely, and resolution takes place. The amount of permanent damage will be in inverse proportion to the extent of the resolution.

It should not be forgotten that with each new attack of urethritis the arthritis may recur, irrespective of the result attained in past attacks. A prognosis as to permanent cure therefore should include this reservation.

Treatment.—There is no specific remedy for gonorrheal arthritis; all treatment must be expectant and systomatic. The usual treatment of inflammatory rheumatism is of no benefit whatever in this affection. Many drugs have been tried, including salicylic acid, colchicum, potassium iodid and quinin, but none of these has been shown to be of any special value, and they cannot be depended upon for results in the average case.

Most important of all is the local treatment and the treatment of the primary infection. The quicker we reduce the urethral inflammation, the sooner can we expect to see results in the complications. Rest in bed and immobilization of the affected parts is a sine qua non. In the very acute stage, the application of leeches and hot poultices will often hasten the departure of the very severe symptoms and usher in the subacute period. A favorite method is the application of pure or 50 per cent. ichthyol to the parts, covering them well with cotton or flannel; methyl salicylate may be used in the same way with benefit. An ointment made up as follows is often of distinct value:

℞ Ichthyoli
Guaiacoli, āā ʒi
Pulv. opii, ʒss
Petrolati, or
Lanolini ʒi M
Fiat unguentum.

In the subacute and chronic stages, in the presence of large accumulations in and about the affected joints, radical surgical measures are necessary. The joints may be tapped, the fluid withdrawn and the joints irrigated, preferably with hot bichlorid solution, 1-5000. Incision, followed by irrigation and drainage, is often made necessary by existing conditions.

For the cases that are chronic from the start, with little or no exudation, the application of counter-irritation, such as the Paquelin cautery, blisters, iodin and ichthyol, followed by frictions, massage, douches, etc., will often be found useful.

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Internally, perhaps the best remedy at our command is the pure oil of gaultheria, given in doses of ten to twenty drops three times a day, in milk or water. Iodid of potassium is extensively used, and likewise the general tonics, but their application must depend on the individual case.

We have in Bier's hyperemic treatment a most effective agent in the cure of gonorrheal arthritis, but it should be applied carefully and intelligently to secure good results. In the acute condition it should be employed from the very beginning of the attack. The bandage should be applied not too tightly, and should not be combined with other local measures—*i.e.*, cold or heat. It should be kept in place about twenty hours continuously, and should not be withdrawn too soon.

Under this method of treatment the pain rapidly diminishes or disappears entirely, and movement of the parts may be encouraged very early, thereby reducing to a minimum the liability to ankylosis or muscle atrophy.

Undoubtedly our most efficient aid in the treatment of this distressing complication is found in the vaccines. My personal preference is for a mixed polyvalent gonococcic vaccine containing 400 million gonococci to the dose (Mulford). I have obtained excellent and most satisfactory results with this product. Autogenous vaccines have not given me the results claimed by others.

More recently surgical measures have been brought into play. It has been demonstrated beyond any doubt that the development and persistence of arthritis in connection with gonorrheal urethritis is due to the presence of an infecting focus somewhere within the genito-urinary tract. The seminal vesicles are usually found enlarged and thickened, and filled with pus and detritus (male pus tubes). Draining and even excision, in severe cases, have been adopted as a radical measure for the relief of chronic gonococcal arthritis, with a considerable measure of success.

On the other hand equally good results may be obtained through Belfield's much simpler operation of vasotomy. This is done under local anesthesia and the patient is confined to bed for not more than one day, possibly two, as against three or four weeks after the radical operation. The splendid results following vasotomy, especially when done in conjunction with catheterization of the ejaculatory ducts and the administration of polyvalent mixed vaccines as above suggested, are such as to justify the employment of this method in every case of arthritis of gonococcal origin.

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Medical Life

VOL. 28, No. 7 JULY, 1921

MEDICAL LIFE

Syndrome of Gastric Irritation

John L. Kantor, M.D.

Chronic Anterior Urethritis

A. L. Wolbarst, M.D.

Doctrine of the Natural Constitution

Max Neuburger, M.D.

Venesection in Talmudic Literature

Aaron Brav, M.D.

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(*Established* 1851)

VICTOR ROBINSON, M.D., Editor

VOLUME 28 NUMBER 7 — **JULY, 1921** — NUMBER TEN OF NEW SERIES

Section on Contemporary Medicine

THE MODERN TREATMENT OF GASTROINTESTINAL DISEASES

By John L. Kantor, M.D.

Chief in Gastrointestinal Diseases, Vanderbilt Clinic, Columbia University.

III—Treatment of the Syndrome of "Gastric Irritation"

It frequently happens in medicine that one is called upon to treat symptoms or an entire syndrome before it is possible to make a differential diagnosis. This is obviously the case at the onset of many acute infections. It is likewise true in digestive diseases, where the stomach may respond by a syndrome of irritation to divers conditions originating either within this organ or elsewhere in the body. This condition of gastric irritation—which may familiarly be called the "hyper" syndrome—is associated with one or more of the following disorders of gastric physiology:

1. Hyperacidity or hyperchlorhydria.
2. Hypersecretion.
3. Hypertonicity, which may lead to spasm of the orifices.
4. Hyperperistalsis.
5. Hypermotility, i. e., rapid gastric emptying, whether initial or total. This may coexist with delayed emptying due to pylorospasm.

The symptoms of this syndrome are those generally understood under the older and narrower concept of "hyperacidity," and are, commonly: epigastric distress, weight, or fulness after meals; hunger distress or pain; heartburn; belching or regurgitation; occasionally vomiting.

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The underlying causes that produce this syndrome may be any of the following:

1. Instability of the autonomic nervous system, now often spoken of as "vagotonia," a pure neurosis.

2. Lesions within the stomach or duodenum, such as ulcer or cancer.

3. Lesions in the digestive tract outside the stomach and duodenum, such as gall stones and appendicitis.

4. Lesions outside the digestive tract, as in the genito-urinary or cardio-vascular system.

It is a matter of everyday experience that at one stage or another, but more likely early in the disease, the treatment of all of the conditions just enumerated is limited for practical reasons to overcoming the syndrome of gastric irritation. In other words, the treatment is essentially the same no matter what the underlying pathology. This does not mean of course that this kind of therapy will suffice to cure the disease or that a real causal therapy should ever be neglected. It is simply a matter of fact that the more far-reaching line of treatment is often inapplicable either because of the necessity of a prolonged period of observation or of the inadvisability of immediate radical treatment. Under such circumstances, then, a rational palliative therapy is a practical necessity.

General Management—The importance of rest to a diseased or irritated part or organ is now generally acknowledged. Rest of the digestive tract can be applied in three ways: rest through peace of mind, rest through bodily repose, and rest through the elimination of irritants from the dietary. It is well known that nervous influences affect the digestive function not so much through the power of the will as through the play of the emotions. Everyone knows the effects of intense love or hate or anger, the shock of surprise, the strain of long continued, unremitting worry. The latter is particularly important in the production and maintenance of digestive derangement. Every effort should be made to secure an equable frame of mind as a basic factor in treatment. If for any reason this cannot be accomplished, the relation between the mental state and the digestive process should be carefully explained to the patient, for in this way at least the accompanying vicious circle—worry over the physical condition, causing more indigestion, which, in turn, causes more worry, and so on—can best be broken.

Rest through peace of mind is perhaps best applied where the gastric irritation is due to or associated with a pure neurosis

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such as vagotonia. In this condition the autonomic nervous system is regarded as being in a state of congenital, irritable instability. This in turn is responsible for the disturbance in gastric physiology in a large number of persons who have no organic disease whatever. Whether or not an organic lesion such as that of ulcer, for example, may result from the long-continued effects of this predisposition is still a matter of speculation. Such a contingency seems well within the realms of possibility. At any rate, the benefits to be derived from the utmost possible reduction of mental strain in individuals of this type are beyond question.

That actual bodily rest greatly relieves the symptoms of gastric irritation would appear to be almost axiomatic. Yet this simple and obvious form of treatment is—largely because of the patient's inherent dislike to give up his work—long delayed or quite neglected. As a matter of fact, however, it should never be forgotten that many or all of the symptoms of gastric irritation, pain, vomiting, heartburn, and the rest, may be immediately and completely brought under control just as soon as bed rest is ordered. Bed rest may be absolute or it may be limited to the period of one or two hours immediately following meals.

Diet—In gastric irritation the diet should be bland and nutritious. A specimen form is given herewith:

DIET IN GASTRIC IRRITATION

Breakfast

Eggs, boiled or poached.
Cereal.
Milk.
Bread or toast and butter.
Coffee if allowed.

Lunch and Dinner

Meat: Broiled steak, roast beef, lamb, mutton or chicken (broiled, boiled or roast).
Fish: Baked, broiled or boiled.
Vegetables: Potatoes, peas, squash, cauliflower, asparagus tips (well cooked or mashed). Later: Carrots, beets, beans, spinach, macaroni.
Bread or toast and butter.
Desserts: Gelatin jelly (Jell-O). Tapioca, rice, stale bread or cornstarch pudding. Custard. Ice cream. Stewed prunes. Canned peaches, pears, plums. Baked apple, apple sauce. Sponge cake.
Drinks: Milk, buttermilk, cocoa, water, tea if allowed.

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Avoid—Everything fried or fat.
Everything highly spiced or seasoned. All mustard, vinegar, ketchup, horseradish, relishes, sauces and gravies.
All tinned, smoked and preserved meat and fish.
All pork, veal and game.
All raw fruit.
All stimulants, tea (unless allowed), coffee (unless allowed, and carbonated waters.
All pastries, preserves and candies.
Note—It is understood that everything not specifically allowed is forbidden.

This diet may be regarded as standard in the sense of being applicable to a great variety of conditions met with in the practice of gastro-enterology.

As has been explained in a previous section, no diet list should be handed, as printed, to a patient. It is always time well spent for the doctor and client to go over the list together and make such modifications as appear necessary. In this way only can individual needs and peculiarities be taken into account.

The amount of food consumed depends, of course, on the type of condition present. In well-nourished or obese persons a minimum of three small meals suffices. In the emaciated, or where hunger pains or distress are complained of, full meals or extra nourishment between meals are indicated. It is generally immaterial whether the heavy meal be taken at noon or in the evening unless night distress is present, when, of course, the former alternative should be adopted. In cases where constipation is prominent and where the stomach can stand it some of the coarser foods may be added to the diet to increase the bulk of the feces (see section on the treatment of constipation). Ordinarily, however, the addition of such articles is not well borne and the object can be better achieved by appropriate medication. When the symptoms are marked and some serious condition is suspected, a more restricted ulcer diet should be instituted (see section on the treatment of ulcer).

The question of how the food is prepared should always receive consideration. For example, fresh mashed potatoes are among the most easily digested foodstuffs, whereas warmed-over potatoes have induced many an attack of indigestion. As a rule, home cooking is far superior to that of the cheaper restaurants. The late Dr. N. B. Potter used to recommend early marriage as a cure for young male dyspeptics.

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The use of tea and coffee should be decided from the point of view of their effect on the nerves and bowels rather than on the stomach. Carbonated waters increase cardiospasm and gas distress in some people. The danger in fresh fruit lies particularly in its being insufficiently ripened, and thus increasing greatly the local acidity.

Meals should always be taken on time. A certain amount of latitude as regards the exact hours selected may be left to the patient, but once fixed the meal hour should never be violated. An interval of four hours between breakfast and lunch and six hours between lunch and dinner is generally satisfactory. Extra feeds should also be taken promptly. A very great advantage of regularizing the meals is that the physician is enabled to gain exact knowledge as to the relation of pain to meals and the relief of pain by food. The information thus obtained (and occasionally unavailable from the patient's history) often proves to be of the greatest value in diagnosis.

Too much emphasis cannot be laid on the importance of eating meals with sufficient deliberation. Granted that normal individuals can bolt their food for long periods of time with apparent complete utilization and freedom from symptoms, there is no question that a dyspeptic individual cannot continue to take such liberties. Eating with sufficient deliberation implies the thorough subdivision of each bolus of food by proper mastication and the cultivation of sufficient leisure for the reasonable enjoyment of each meal. The patient must get as far away as possible from the lunch counter method of feeding. He must be convinced that how he eats is of even greater importance than what he eats. In actual practice it may be found necessary to impose a minimum period for the consumption of each meal.

Drug Therapy—The medicinal treatment of gastric irritation involves the use of the following three chief classes of drugs: a. Alkalies. b. General sedatives. c. Local sedatives or antispasmodics.

a. Alkalies. Although it has been experimentally established beyond question that the administration of alkalies is followed after an interval by an increased acidity of the gastric juice, there is no disputing the fact that the symptoms associated with hyperchlorhydria (acidity exceeding 40 degrees free or 60 degrees total after an Ewald test breakfast) are promptly and, as a rule, completely relieved by the proper administration of these drugs. The usage in regard to antacids varies all the way from a single dose of baking powder taken immediately after meals to repeated doses

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of more or less elaborate combinations of various alkaline salts administered during the digestive period. Sodium bicarbonate, which is probably the most commonly employed alkali, neutralizes gas quickly, but without prolonged action, causes the evolution of considerable gas, and is non-cathartic. The property of causing free gas production makes it of value in ridding the stomach of small but distressing air or gas accumulations sealed in by the spastic action of the cardiac sphincter.

Magnesium oxide (calcined magnesia), on the other hand, neutralizes acid slowly over a long period and is cathartic as well as antacid. Inasmuch as many patients suffer from a triad of "hyperacidity," gas distress and constipation, a combination of both the above drugs is rational therapy and has stood the test of time in the great majority of such cases. A powder of this nature may be prescribed, in bulk, as follows:

℞

Sodium bicarbonate	120.
Calcined magnesia	20.

M. Ft. Pulvis. Sig. Level teaspoonful in a little water after meals.

If too much catharsis is produced by the above, the dose may be reduced, the proportion of magnesia lessened, or an equal part (20 units) of bismuth subcarbonate added. In susceptible individuals too much alkalinization of the system may produce burning on urination. This, of course, calls for a diminution in, or temporary suspension of, the treatment. Where symptoms are not controlled by a teaspoonful dose after meals, as in cases where hunger pains come on late and are severe, the dose may be divided and the second portion administered a short interval before the symptoms become due.

b. General sedatives. It is well to think of every gastrointestinal condition as being composed, possibly, of two elements, one organic, the other functional. The total amount of mischief depends not only on the severity of the organic process, but also on the general nervous (autonomic) instability of the patient. The latter state is exemplified by those common symptoms of widespread character included by the laity under the term *nervousness*, viz., emotional instability, tremors, insomnia, headaches, globus hystericus, "poor circulation," tachycardia, palpitation, dyspnea, etc. All these things are in addition to the specific functional disorders of digestion already considered. In all patients showing this instable make-up it is well to cut out as much of the diffuse symptomatology as possible by the use of general sedatives. By

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thus depressing the autonomic irritability the "nervous background" tends to disappear and only the really specific symptoms remain. At the same time the patient begins to feel "rested," his confidence and poise tend to come back, and his morale is bolstered.

The drugs best suited to this purpose are the bromides. Fifteen grains of the "triple" salts may be given three times daily. It is best to administer this medication about a half hour before meals in the hope that gastric irritability will be allayed during digestion. A good preparation is the effervescent tablet. If insomnia is prominent a fourth dose may be prescribed at bedtime, or a somnifacient such as veronal or some of the newer preparations may be given, or else the bromide may be combined with chloral as in the following prescription of Dr. Lockwood's:

℞

Chloral hydrat.	2.0
Strontii bromidi	10.0
Aq. chloroformi	120.0
Spir. anisi	0.5

M. Sig. A teaspoonful in water four times a day.

c. Local sedatives and antispasmodics. Atropine has enjoyed an extensive reputation as an antispasmodic par excellence in gastric irritability. In many cases, unfortunately, it seems to produce its toxic effect on the circulatory or general nervous system long before it exerts any demonstrable relaxing action on the digestive apparatus. It is well, therefore, to begin with small doses, say 1/200 of a grain (or 3 minims of the tincture) three times daily, and then to work up to full physiologic doses of about 1/75 of a grain (10 to 12 minims of the tincture) three times daily. Many of the other drugs that have been recommended from time to time as digestive tract antispasmodics have the same failing as atropine, i. e., when they work they give good results but their efficacy seems to be capricious. On the whole, it seems doubtful whether this group of medicines gives any better service than that rendered by the bromides. A possible exception among the newer drugs may have to be made in favor of the adrenal preparations, not so much when used by mouth perhaps, as when given hypodermatically where quick action is required. In certain cases of severe peristaltic unrest and vomiting, particularly in pregnancy, this form of medication may prove to be of considerable value.

Treatment of Special Conditions—a. Hypersecretion. When the fasting stomach is found to contain considerable amounts

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(over 25 c.c.) of pure gastric juice, the condition variously named hypersecretion, gastrosuccorrhea, or Reichmann's disease, is said to be present. The treatment of this disorder of secretion is almost specific. It consists of aspirating the fasting stomach each morning. It is surprising how much relief will be afforded by the removal of a small amount of gastric juice under these circumstances. Just why this should be is not readily explicable, but the fact remains that the sensation of weight, distress, goneness, or actual pain complained of by the patient completely disappears just as soon as the offending acid is evacuated.

b. Cardiospasm. Mild forms of cardiospasm are by no means uncommon in gastric irritation. The condition is generally relieved by the alkaline-sedative medication outlined above. It may disappear entirely after the aspiration of a single test meal. In some cases the intubation must be repeated and the tube may be left in situ for a few minutes at each session. Especial emphasis should be laid on slow and careful eating and all irritating substances should be rigorously excluded from the diet. It may be mentioned that in some individuals the drinking of cold carbonated waters commonly precipitates an attack of this condition.

c. Pylorospasm. Spasm of the pylorus, when not very marked, usually responds to rest, proper diet, and medication. More severe forms of this condition call for the removal of gastric food residues, lavage, and appropriate diminution in, and spacing of, the food intake. The treatment will be considered in greater detail in a subsequent section.

DREAM MECHANISM

By Hyman Laveson, M.D.

Dreams, we know, have pretty generally been regarded as of no importance, as foolish jumbles, as something grotesque, though perhaps interesting, and often as dependent upon conditions just preceding or occurring during sleep. This latter has been as far as the attempt to explain them has usually gone. For example, a person dreams he is in the Arctic regions because he has kicked the bed clothes off and is cold. The simple question why he should dream of being in the Arctic regions rather than at home in the winter or in a cold storage plant or in a thousand other cold places shows at once the inadequacy of such an explanation.

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To put the whole matter simply, the material of which the dream is composed must necessarily be made up of the content of the dreamer's psyche, and there must be some sufficient reason why it is put together in one particular way rather than in another. To fail to accept these propositions is equivalent to acknowledging that the dream may be wholly fortuitous, which again is tantamount to denying the possibility of a scientific psychology. Dreams are psychic events. They are end-products which can only reach their complete explanation by knowing all that has gone before. If we take up their study in this spirit, that they are phenomena, and therefore are proper objects for scientific investigation rather than just nonsense, to be dismissed without even examining their credentials, we shall soon see that they are filled with meanings, often of the most important character for an understanding of the individual and his problems.

We think in one of two different ways: first, by the method with which we are all familiar and to which the term "thinking" is almost exclusively applied. In this method of thinking there is clear consciousness in the sense that the person is definitely oriented toward reality and the thinking is carried on with the exercise of careful critique and under control of the processes which we term "intellectual." Such clear conscious intelligent thinking has its motivating incentives in reality.

There is another kind of thinking, however, which is very different from that just described. It is the thinking which takes place without conscious direction or critique, the thinking in which ideas follow one another without selection, coming and going without apparent reason, and corresponding, not at all, to any relation between the individual and reality. This is the kind of thinking that takes place during dreaming, whether during the dream of sleep, or during day-dreaming at times of mental abstraction and so-called "wool gathering." The thoughts which come at such times we no longer call thoughts, but phantasies.

What is the significance of this thinking by phantasy formation? To understand this we must turn back for the moment to what has been said of the pain-pleasure and the reality motives for conduct, the conflict, and the nature of the unconscious and the conscious to realize that mental life is the result of an effort to bring the individual into more effectual adaption with his environment. And if we will glance for a moment over the life of the individual from the period of the first few weeks when the principal motive in life is nutritional to the time of adulthood with all its conflicts and social demands, we will realize a process

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of adjustment has necessarily taken place in the interval. Of necessity there has had to be put aside, more and more, as the demands from the outside increased, the immediate satisfaction of the demands from within which clamor for recognition. And so the process of adaptation has to be one of compromise, compromise between the pleasure motive which demands the immediate satisfaction of all bodily cravings and the reality motive which puts off fulfillment of the demands of the present world of reality into an ever receding future.

The world of phantasy, the world of dreams, is dominated not by the reality motive, but by the pleasure motive; in other words, by the unconscious that can only wish. It is for this reason that phantasy formations, whether they occur in the sleeping or in the waking state and whether they be termed dreams or visions or what not, are fundamentally wish fulfilling.

Therefore, at the outset, we see conflict at the very root of dreams, and realizing the nature of this conflict, we should not be surprised when we find an individual, unable to measure up to the demands of the real world, sinking back into his own world, the world of phantasy, the world where things come true as he would wish them. Thus, he escapes from the demands of real life, and takes flight into this region, either in his dreams, or, as we shall see later, perhaps in a psychosis.

The whole question of the meaning of reality and of phantasy, particularly as related to dreaming, is especially well brought out in the Papyri of Philonous. The dialogue is between Protagoras and Marasophus and proceeds as follows:

P.—As to your other question, did you ever meet Exanthias, the son of Glaucus?

M.—Yes, but he seemed to me a very ordinary man and quite unfit to aid in such inquiries.

P.—To me, he seemed most wonderful, and a great proof of the truth I have maintained. For the wretch was actually unable to distinguish red from green, the color of grass from that of blood! You may imagine how he dressed, and how his taste was derided. But it was his eye and not his taste that was in fault. I questioned him closely and am sure he could not help it. He simply saw colors differently. How and why, I was not able to make out. But it was from his case and others like it, but less startling that I learned that the truth and reality are to each man what appears to him. For the differences, I am sure, exist even though they are not noticed unless they are very great and inconvenient.

M.—But Xanthias was merely diseased, and his judgments about colors are of no more importance than those of a madman.

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P.—You do not get rid of the difference by calling it madness and disease. And how would you define the essential nature of madness and disease? ?

M.—I am sure I do not know. You should ask Æsculapius.

P.—Ah, he is one of those gods I have never been able to meet! Let me hazard, rather, a conjecture that madness and disease are merely two ways of showing inability to keep up that common world in which we both are and are not, and from which we seem to drop out wholly when we die.

M.—A strange conjecture truly for a strange case. Would you apply it also to disease? For in that case the difficulty seems to be rather in conforming oneself to things than to one's fellowmen.

P.—To both, rather. Does not a fever drive one madly out of the common world into a world of empty dreams? And is not the diseased body part of the common world?

M.—Perhaps, but such conjectures do not interest me. Will you not rather give an account of your own disease or madness, that of thinking that the common world can be compounded out of a multitude of individual worlds?

P.—Willingly. Conceive then, first of all, a varied multitude, each of whom perceived things in a fashion peculiar to himself.

M.—You bid me conceive a world of madmen!

P.—It does not matter what you call them, nor that our world was never in so grievous a condition. I only want you to see that such madmen would in no wise be able to agree or act together, and that each would live, shut up in himself, unintelligible to the others and with no comprehension of them.

M.—Of course.

P.—Would you admit also that such a life would be one of the extremest weakness??

M.—So weak as to be impossible?

P.—Perhaps. And now suppose that by the interposition of some God, or as the saying is, "by a divine chance," some of these strange beings were to be endowed with the ability to agree and act together in some partial ways—say, in respect to the red and the sweet, and the loud and the pleasant. Would this not be a great advantage? And would they not be enabled to join together and to form a community in virtue of the communion they had achieved. And would they not be stronger by far than those who did not "perceive the same?" And so would they not profit in proportion as they could perceive the same? And would not a world of "common" perception and thought thus gradually grow up?

M.—Only if they really did perceive the same: to agree in action and to "perceive the same" are not the same and when you have reached the former you have not the same and when you have reached the former you have not proved the latter.

P.—As much as I need to. For by "perceiving the same," I mean only perceiving in such a way that we can act together. Thus, if we are told that a red light means assistance then if we both flee from the red and welcome the green we are said to perceive the same. But whether what I perceive as red is in any other sense the same as what

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you perceive as red, it is foolish even to inquire. For I cannot carry my red into your soul nor you yours into mine, and so we cannot compare them nor see how far they are alike or not. And even if I could, my comparing of my red with yours would not be the same as your comparing them. Moreover, if we imagined what to me, indeed, is absurd but to you should be possible, namely, that when I perceive red I feel as you do when you perceive green and that your feeling when you perceive red is the same as mine when I perceive green, there would be no way of showing that we did not perceive alike. For we should always agree in distinguishing red and green. The sameness, therefore is not the cause of the common action, but its effect. Or, rather, it is another way, less exact, but shorter, of asserting it. And so there arises the opinion that we all perceive alike, and that if anyone does not, he is mad. Now this is true as opinion, being, as it is, convenient and salutary and enough for ordinary life. But, for the purposes of science we must be more precise and regard perception of the same not as a starting point, but as a goal, which in some matters we have almost, and, for some purposes, we have quite reached. In short, we always at the bottom reason from the common action to the common perception, and not conversely. Hence, too, when we wish to speak exactly, we must infer that no two ever quite perceive the same, because their actions never quite agree. Moreover, this makes clear why we agree about some things, and judge the same and not about others, but judge differently. We agree about the things it is necessary to agree about in order to live at all; we vary concerning the things which are not needed for bare life, even though they may conduce to a life that is beautiful and good. But, it is only when we do not act at all that we are able to live our own private life apart, and to differ utterly from all others.

M.—And what, pray, is this strange life in which we do not act?

P.—Do you not remember the saying of Heraclitus, For the waking, there is one common world; but of those asleep each one turns aside to his own privacy? And do you suppose that if we acted on our dreams, we could with impunity do what we dream? Is it not merely because we lie still, and do not stir that we can indulge our fancies?

This dialogue sets forth an excellent point of view for differentiating the world of reality from the world of phantasy. It makes the differentiation on the basis of the criterion of action. Ellis has said, "Dreams are real while they last." Can we say more of life? It may be said that the world of dreams is a real world; but it is not a world of reality. The distinction is fundamental. Reality calls forth action by the organism as a whole. It is analogous to the distinction that Sherrington draws between the sense of taste and the sense of smell. Taste is an interoceptive sense which calls forth visceral responses, while smell, to the extent that it is an exteroceptive sense, calls forth acts of locomotion for the purpose of relating the body to the source of the odor, moving the body towards or away from that source.

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It will be advantageous at this point to describe the dream mechanisms in the main as laid down by the epoch-making work of Freud, *Die Traumdeulung*. These interpretations have been elaborated and worked over to a considerable extent, but remain, in the main, as he formulated them.

The dream almost always uses as the material through which it expresses its meaning the experiences of the last waking state. And it is largely because of this fact that so many psychologists have insisted and still insist that the dream is the result of sensory experiences and can be modified more or less at will by sensory stimuli. For, as for example, the man who kicks the bed clothes off at night and dreams of being in the Arctic regions. This is illustrative of the familiar fallacy of *post hoc ergo propter hoc*. The reason why the dream uses the material of the last waking state is perfectly plain. Something in the previous waking period by associational relationship has touched an important complex in the individual and has stirred it into activity. This is expressed in the phantasy formation of the dream of that night.

The process may be compared to the vibration of the A string on the piano. If one holds a vibrating A tuning fork over the harp, it is the A string, and only the A string, which vibrates, not the G nor the C. So, when some event in the previous waking experience vibrates in harmony with some fact of great importance buried beneath the threshold of consciousness, that mental fact is stirred into activity. That is why, when it forms phantasies, it uses the material which brought it into being. One of my patients had a dream that took him back to his youth and to a setting in which important emotional matters in his child life had occurred. In the dream he saw a gray fox. This was one of the central visualizations of the dream drama; but in his childhood days, although he had seen many foxes, he had never seen a gray one. He had, however, seen red foxes. How does the fox of the dream come to be gray? He had been to the zoological garden on the dream day and there had seen gray foxes. Now is it not easy to see why? Because the fox stirred up an important association of emotional significance of his youth, and it started him to dream. Although he had never seen other than a red fox in his youth, the dream fox was gray because it was a gray fox of the day before which had started the associations. And these had stirred up the material out of which his dream was formed.

When we examine a dream the first thing that impresses us is its apparent triviality. If it deals with matters important in the life of the individual, the expressions it makes use of must be

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highly symbolic, i. e., must stand for some meaning. This is true. The dream is symbolic in the sense of Ferenczi, namely, its origin is the unconscious. We will understand this when we realize that the dream is an excursion into the world of phantasy, where the pleasure motive dominates. Now, the pleasure motive, as we have seen, is opposed to the reality motive. Therefore, if it is to come upon the stage and play its part, it can only do so under the penalty of wearing a more or less complete disguise. The function of the dream is, in part at least, to conserve sleep. Thus, the play of the pleasure motive must be sufficiently disguised so that the dreamer is not awakened. The pleasure motive, it will be seen, has been repressed while the reality motive has come to the foreground, and therefore, it is the repressed expressions of the pleasure motive that come forward to expression in the dream. In other words, the dream is wish-fulfilling, as we have seen, and it also contains, as a rule, the expression of some mental fact which in the waking life has been repressed.

For example: A gentleman told me that he awoke with a consciousness of having been dreaming, but he could not remember any of the dream. He had only a conviction that he had either used or heard used during the dream the word "diathesis." He said he had never heard the word "diathesis," in fact, so far as he knew there was no such word, so he felt that he must be mistaken, and that the word was probably "diaeresis." He immediately got up and went to the dictionary to see whether there was such a word as "diathesis." I asked him what he found the word "diathesis" to mean, and he said "a tendency to disease." I asked him what "diaeresis" meant, and he said that "diaeresis" was the mark one made in writing indicating that something had been left out. Of course, this is not the true meaning; but the significant thing is that it was the meaning to him.

In the light of a little additional information the meaning of the dream became clear. The illness pointed pretty directly to the kidney as the offending organ, and he had been afraid that he had a tendency to kidney disease. He had repressed this fear, he had refused to look it squarely in the face and to regulate his life accordingly. He had preferred to act as if no such tendency had existed, thereby endeavoring to delude himself into the belief that no such tendency in fact did exist. The dream shows the true state of affairs, shows his fear of kidney disease, the repression of this fear, and the wish that his "diathesis," so to speak, might be eliminated, left out, which is the meaning that "diaeresis" had for him. And so, again, in a simple dream fragment like this we get

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instantly, directly, and in a few moments right at the heart of the question. We find out exactly the thing that is worrying the patient, worrying him so much, in fact, that to one who knew him it was quite apparent that something had gone wrong.

It will be seen in this dream that the symbolism serves a very definite purpose—it clothes the dream in a language which is illogical to the dreamer. It, therefore, conserves sleep and permits the wish-fulfillment play to go on under such a disguise that the sleeper is not disturbed. The superficial aspect of the dream as the dreamer himself sees it and as he relates it, is the manifest content of the dream. The deeper meaning which lies behind the manifest content comes out when one is able to read the language of the dream. This is its latent content and contains the true meaning of the dream. The change of the latent into the material of the manifest content is accompanied with a great deal of distortion. Thus, the symbolisms in the above example serve as distortions of the latent content so that it is not recognized by the dreamer in the manifest content.

Another important mechanism of distortion is displacement. This mechanism results in removing the emotion from the place where it belongs to some other element of the dream, and serves to disguise the true meaning. A patient, for example, dreamt that a man pushed her off the edge of a precipice at the base of which was a mass of writhing serpents. In relating the dream she gave the impression that she had been very much frightened; but on analysis quite the contrary developed. There had been no special feeling of fear at all. The falling from the precipice into the mass of serpents was symbolic of a moral fall and should have created a great amount of emotion, but no such emotion existed in the dream. Therefore, the dream is distorted and the possibility of the dreamer's knowledge of its true meaning is greatly interfered with. The telling of the dream, however, which led to the impression that great fear has as a matter of fact been experienced was the result of another mechanism—that of secondary elaboration. After the dreamer awoke and remembered the dream, it naturally appeared senseless unless the emotion of fear or horror were involved with the experience. Therefore the waking consciousness, in order to make the whole thing appear logical, attached the appropriate emotion where it belonged, giving meaning to what was otherwise without meaning.

In describing the above mechanisms of dream formation, it has been seen how the latent content is disguised before it is permitted to appear in the manifest content. This disguise is brought

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about by what Freud terms the endopsychic censor of consciousness. The censor permits only certain expressions to get into the dream. The thoughts of the patient can appear only under certain restrictions and under certain disguises. The distortion, the displacement, the symbolization serve the purpose of this disguise.

It must not be thought, however, that it is but necessary to read the symbols of the dream in order fully to understand the latent content. The dream is a tremendous condensation of a vast amount of material all of the elements of which as they appear in the manifest content of the dream are determined from many sources—they are over-determined. For example, an individual may appear in the dream, who is entirely unknown to the dreamer, a person who does not look like any one he has even seen before. An analysis of the dream, however, may show that if the characteristics of this person are separately considered, each of them belongs to a person known to the dreamer and that the dream person, therefore, is a sort of composite of these several characters united to serve the purposes of the dream. An example will illustrate some of these mechanisms.

The patient dreamt that she was in a place of amusement, something like a circus, where there were crowds of people, among others a young lady to whom she took quite a fancy, and who invited her to stop in her home on the way back from the fair. She met there this young lady's mother, and they were very pleasant to her, so that she in turn invited the young lady to a party at her house. She seemed to be living in her present home. At the same time she also invited a man to the party, a man with red hair and blue eyes. Some days elapsed, and then, by invitation, she called on this girl for the afternoon. During the interim the girl had married, had had a baby and had remodeled her home inside and out. She took her through to show her everything. They had such a pleasant time together that she again invited the young lady to her home, telling her to bring the baby. She also invited the red-haired man, who also had married in the meantime and had a child. He did not let her know, however, that he had married in order to surprise her. She and he were both surprised. The children were about the same age. Everybody had a good time at the party.

In the course of the analysis of this dream it appears that the patient had forgotten to tell all of it. The portion forgotten was that there was another man in the dream, a dark-haired man; but she didn't seem to pay any attention to him. He

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seemed to have his back toward her. As far as she could tell, he looked like two men that she had cared for.

We have here an example of condensation and identification. The young lady that the dreamer met at the place of entertainment, and whom she became friendly with, really represented herself in the dream. Let me give the reasons why this is so. Some of these reasons are based upon things which I had learned in the analysis previous to the dream.

The young woman had had a few years previously a love affair with a young man with red hair and blue eyes. He had asked her to marry him. She had refused, however, because she thought her duties at home required her to help care for her mother and to support the household while her brother was going through college. She had been introduced to this young man by another gentleman. When this other gentleman found that matters were getting serious between the two he had, unknown to the girl, a conversation with the red-haired man in which he advised him not to marry the patient, as he did not think they were suited to each other.

Some time after her refusal, the man who introduced them, called her up on the telephone and told her that the red-haired man was being married that night. As may be imagined, thus was a considerable emotional experience. The dark man who stood with his back to her in the dream was the man who had introduced them. This illustrates the point that Freud makes that the little addendum to the dream which had been forgotten in the original account usually contains the key to the situation. The young woman with the baby in the dream, who represents, I say, the patient, is very completely disguised, so that the identification is not discernible. The patient herself was a woman with dark eyes and black hair. The young lady of the dream was a decided blonde. In addition to this, the dream girl was slender, while the patient is decidedly the opposite (simple distortion by opposites). The dream girl was not accompanied by her husband, and she did not appear to enter at any point in the dream, either by reference or supposition or otherwise. Incidentally, too, the red-haired man was not accompanied by his wife, and his wife appeared also to be as absent, in fact, as was the husband of the girl. The girl also wore a tailor-made suit of a brown color. The patient herself had a tailor-made suit, but not of that color. Yet she had had another dress that was of the same color, but this was not tailor-made. This dress, which was of the color as that which the dream girl wore, was the dress that she had worn upon the eventful

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night upon which she had had the disagreeable sexual experience which had resulted in her psychosis. The patient also says that the dream girl acted, as she might have acted, and had in the dream what she really wanted.

Further complications are that the dream girl looked like the sister of the red-haired man. She was a woman who wanted to marry; but who wanted neither children nor to keep house. It also developed that the sister of the dark-haired man who introduced them had a light-haired baby boy. She experienced the feeling also that she was worried in the dream because both these persons had babies and she had not; neither had she any sweetheart, nor in fact anything. The censor of consciousness made the disguise so complete that the patient should not recognize it and was, therefore, not disturbed by it.

Additional reasons for believing that this was an identification are, in the first place, the patient describes herself in the dream as being present at the party, but nobody paid any attention to her; nobody spoke to her and the events of the party transpired despite the fact that no one had had anything to do with her—she was merely an onlooker. In other words, the dream had put her in the position where she could view herself and her acts. Then the dream girl had no husband, and the dream man had no wife. The two babies in the dream now have to be accounted for, to further emphasize the process of identification which is a phenomenon of the broader process of condensation and of still another—the process of decomposition. She had really been in love with this man and had regretted that she had not married him. She, therefore, had the natural woman's wish of wanting his baby. The baby of the red-haired man in the dream had red hair and blue eyes. Consequently, it is evident that it was his baby. But how about the other baby of apparently the same age? The dark man who had introduced the two had a sister who had a light-haired baby boy of whom the patient had been very fond. It is, therefore, quite evident that the two babies represented a decomposition product. The red-haired baby is the wish baby of the man with whom she was in love, the light-haired baby is the real baby for whom the patient had an affection. The patient, therefore, wished for the baby of the man she loved, for whom she might have the love and affection that she had learned to have for the real baby that had been in her experience. The dream, therefore, expresses a wish for marriage to the man loved and a desire for his baby.

Another very important type of dream to understand because

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of its very great importance to the dreamer is illustrated by the following example: A young man dreamt that he stood before a coffin in which his grandfather lay dead, and as he stood there his grandfather's body moved. The head turned to one side and the person appeared to be uneasy. I asked the dreamer what his grandfather had meant to him. His reply was that he had been his ideal man. So the meaning of the dream is plain. It meant for the dreamer that his ideal was dead, but that it did not rest easy in death. In other words, though dead it stirs and would live again. The dreamer instantly recognized the truth of this interpretation. He is a brilliantly endowed, active, keen minded young man, with so much money that he does not have to put his nose to the gindstone to do the daily task. He, therefore, leads a dilletante existence in which he finds no true, adequate expression. His ideal is really dead, but in its death is very unhappy. Here we see not only the meaning of the dream, but the tremendous important teleological significance of it. The dream says to the dreamer "If you would be happy be up and doing. Lead a life of usefulness, a life of accomplishment. Only in such a life can you find fulfillment."

Another example to show how the real vital worry of the individual may read, in the symbolism of the dream: the following is the dream or, perhaps, a waking vision; for the individual claims that he was at least half awake, if not quite awake, when it appeared. The recipient is a lady who some months ago while staying in Paris saw the following vision upon awaking one morning. From her bed where she lay she could look into the next room and see the piano. Standing behind the piano, with only face and shoulders visible, she saw a very pale woman. She had dark hair and she wore a brown hat. That was all there was of the vision. The woman did not look like anyone she knew. And she had absolutely no conception that this vision had any meaning other than that probably the drapery was arranged in such a way that it easily fell into the form seen in the vision. But that, of course, cannot be an explanation. There must be some reason why it took just exactly that particular form. So my first question was, "What woman do you know who has a pale face?" She instantly mentioned the name of a young lady. I next said, "How about the brown hat?" and she replied, "I always think of her in brown because that is most becoming to her." I then asked, "What does this young woman mean to you?" Her reply was that she always thought well of her power of mind. She thought of her as under head control, too much perhaps for her own good.

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Now the meaning of the vision is clear. The vision is that of a woman who symbolizes for her one who is opposed to heart control. Therefore she sees only the head of the woman in the vision. Why? The percipient is a widow whose children have reached adulthood and, therefore, no longer require very much care on her part. She had just sufficient means to take care of herself and absolutely no outlet for her activities or affections. She is temporarily stranded, so to speak. She would have an interest in life. The dream shows that her aspirations are reaching out for a head interest now that all those for whom she has affection have been settled in life. The dream deals with the problem of her aspirations, her reachings out toward higher things in life, her efforts at spiritual sublimation.

Here we begin to get into a still deeper meaning of the dream. We touch upon its teleological significance. Not only is the dream wish-fulfilling, but it gives us an idea of just what kind of thing it is that will put matters right. It points the way in which that individual must go in order to find fulfillment, and it, therefore, becomes of tremendous value in offering hints or definite directions for the regulation of the life of the patient.

This teleological character and some other points of interest and importance are well illustrated by the dream of a patient who thought herself standing in front of a convent. Through a closed window she saw a priest, her brother, putting on his surplice to go to hear confessions. The closed window prevented them from talking. She started to go inside to hear him better, but did not succeed in reaching him. She awoke very much depressed.

Many years before the patient had been guilty of an indiscretion which was the occasion of her psychosis—a periodical depression. Although she had fully confessed, she had always felt that she ought to confess to her brother. The brother died, however, without her having accomplished her task in this respect. The dream shows all this, and indicates very clearly by the closed window the obstacle, her brother's death, that stands in the way of resolving her conflict.

Maeder believes that the dream work itself endeavors to accomplish the resolution of the conflict, and that the emotional state of the dreamer on awaking signifies whether it has or has not been successful. He says: "In the dream there is at work a preparatory arranging function which belongs to the work of adjustment." In this case, the fact that the dreamer awoke very much depressed is clearly indicative that the dream work had not been able to bring the conflict to a satisfactory termination.

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Do dreams come true?, is a question frequently asked. The answer is really quite simple. The dream itself represents a wish fulfillment, and if that wish is sufficiently strong to force the individual to try to bring it to pass, it is perfectly easy to see that the dream may come true, that therefore the dream may have a prelusory function which may often be quite clearly defined. A patient, a surgeon, has a dream which clearly indicates his jealousy of a more successful confrère. In other words, he envies him, wishes he had his push and efficiency. To the extent then that he keeps progressing in his ability as a surgeon, the dream will come true.

However, the prelusory character of the dream is often not so clear as this. The woman whose case was just cited wished to confess to her brother. But her brother was dead. How can such a wish as that be brought to pass? She succeeded by symbolizing the physician as her brother and confessing to him. This is a solution of the conflict by resymbolization in the sense of Bertschinger. The process here is not quite so plain; but it is plain how the dream expressed both the wish and the failure to bring it to pass. It is probable that in such expressions as this we have hints of the very greatest therapeutic value.

New York.

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THE MODERN TREATMENT OF VENEREAL DISEASE

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V—Chronic Anterior Urethritis

Just where acute urethritis ends and chronic urethritis begins it is impossible to say. Some acute cases run their course in four to six weeks, and other cases persist even under the best treatment for two or three months. There is no sharp dividing line between the acute and chronic stages of the disease. However, it is safe to say that any attack of acute gonorrhea that has not been cured entirely within ten to twelve weeks may rightfully be considered chronic.

It is well to remember that "chronic gonorrhea" is a loose term which serves to describe any long-standing inflammation of the genito-urinary organs due to gonococcal infection, even though the gonococcus cannot be isolated in the secretions.

The diagnosis at times is rather difficult, particularly since chronic urethritis is always dependent on some pathologic condition secondary to the original infection. Certain features stand out prominently as against those of the acute stage, viz., the comparatively slight urethral discharge, usually found on arising in the morning; the absence of acute pain or urinary urgency; the comparative rarity of complications; the comparative frequency of reflex neuroses; the tendency to more or less frequent recurrence; the variable potentiality of infection inherent in the secretions.

When these features are borne in mind, there can be no failure in the diagnosis. The next step is to determine the location of the infection and its character. The history is of great importance, for it provides information on the number of previous attacks, their duration, complications, if any, and other salient information.

To determine the location of the lesion, the author's Five Glass Catheter Test is most serviceable and will be briefly described. By its aid we can separate mechanically and accurately the shreds and pus from the anterior urethra, posterior urethra, prostate and bladder; moreover, it is extremely simple.

The patient comes with a full bladder. The anterior urethra is washed out carefully with sterile water or boric solution until the washings come out clear (glass 1); this gives us the wash-

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ings from the anterior urethra. A second complete washing gives us a "control" (glass 2); a fine, soft catheter is now introduced into the bladder, and some of the bladder content is drawn off into glass 3; this gives us the uncontaminated bladder urine. If this urine is clear, the catheter is withdrawn, and the patient passes a small amount of urine into glass 4; this gives us the washings from the posterior urethra. We thus have the separated washings of these three portions of the urinary tract. If the bladder content is not clear when drawn into glass 3, the bladder is emptied via catheter *in situ*, carefully washed out and filled with sterile water or boric acid solution. The rest of the test remains unchanged.

The prostate is then vigorously massaged, and some of the bladder content voided, into glass 5. This is known as the massaged prostate urine. This completes the test, though if one desires still further information he can massage or strip the vesicles separately and collect the voided bladder contents into two glasses, 6 and 7.

Having determined that the shreds and pus in the urine are derived from the anterior urethra, our next step is to find out the nature of the lesion. This usually will be a stricture or a follicculitis.

The treatment will be determined by the character of the lesion.

If gonococci are found in the secretions, we must continue the use of the silver preparations, which are so successfully employed in the acute and subacute stages. These are injected into the urethral canal with the small hand-syringe, and retained about ten minutes. The strength should be double that used in the acute stage—protargol 1 to 2 per cent.; argyrol, 5 to 10 per cent.; they should be administered not more often than two or three times daily. If there are signs of reaction or irritation, the strength of the solution should be diminished to that point where it gives no pain or discomfort; so long as gonococci can be demonstrated, astringents *never* should be employed. It is only when we feel certain that there are no more gonococci to reckon with that we are justified in using astringents. Among these, the favorite is zinc sulfate solution, one-half per cent. strength. This may be combined in various ways. A very popular astringent injection is made up as follows:

℞ Zinci sulfat. gr. vi
Liq. plumbi subacet. dilut. ʒiii M.

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Or ℞	Zinci sulfat.	gr. vi
	Bismuth subnitrat.	
	Pulv. acaciæ	āā3i
	Aquae	q. s. ad. ʒiii M.

Or ℞	Zinci sulfat.	
	Acidi carbolici	
	Alum	āā gr. iss
	Aq. dest.	ad. ʒiii. M.

The use of thallin sulfate solution, 1 per cent., gradually increased in strength, sometimes will prove highly efficacious. This is non-irritant, soothing, astringent and antiseptic. It often diminishes the discharge and reduces the inflammation in a short time.

When the inflammation is rather superficial, copious hot irrigations often will be found better than the hand injections. We may use for this purpose permanganate of potassium, 1 :4000, protargol, 1 :1000, oxycyanid of mercury, 1 :4000, or bichlorid of mercury, 1 :20,000.

Silver nitrate may be used as a hand injection in a 1-10,000 solution, gradually increased up to 1 :1000. These solutions, however, are quite painful and irritating. Some alternate the silver nitrate with an astringent, the latter being used to control the discharge and diminish the irritation caused by the silver.

Stricture.—In the strict sense of the word, stricture cannot be cured. Once a stricture always a stricture. The pathologic condition that is responsible for the organic changes in the urethral wall may be removed; the narrowing of the lumen of the canal may be eliminated; the dilatability of the canal at the seat of disease may be restored; but the damage to the wall is done and cannot be retrieved, be our efforts, in a clinical sense, ever so successful. The infiltration in the urethral wall is permanent and organic, and we cannot hope by any means, even with the aid of the knife, to get rid of it. Therefore, while stricture may be cured in the sense that we restore the parts to their normal state functionally, there still remain, and will continue to remain, the structural changes that gave rise to the clinical symptoms of the disease, together with the constant tendency to recontraction. The most we can hope for is a restoration of the natural lumen of the canal and its dilatability, and the removal of the symptomatic evidences of the disease. This constitutes a "cure," but the patient should be informed of the condition of affairs, and should be warned that the stricture in all probability will return in due course of time unless prophylactic measures

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are taken to prevent this occurrence. The patient should have a large-sized sound passed at least once, preferably twice every year for the rest of his life. Only in this way can recurrence of his stricture be prevented.

It goes without saying that this prophylaxis also includes a warning against repeated attacks of gonorrheal inflammation. Every new attack of gonorrhea will aggravate the old lesion and set up a reaction that may lead to the reappearance of the stricture, as well as the formation of new ones.

Treatment.—The treatment of stricture is mechanical. The essential requirement is to dilate the stricture with the smallest amount of trauma, so that it shall not obtrude on the lumen of the canal. The coexisting "gleet," reflex pains and aches, urinary disturbances, psychoses, and all other manifestations and complications of the disease should be treated at the same time. But the primary indication is to restore the canal, as nearly as possible, to its previous normal state.

There is no single method of treatment applicable to all cases of stricture. Strictures at or very near the meatus require incision, because they do not dilate well, and stretching is very painful in this region. For the rest of the pendulous canal, dilatation will be all that is necessary except in certain resistant and non-dilatable strictures, which must be cut. If they are in the anterior urethra—that is, within five inches of the urinary meatus —by internal urethrotomy; in the deep urethra, if of small caliber, by external urethrotomy. All cutting operations must be followed for long periods by the persistent use of sounds.

For the average stricture of small caliber, the steel sound is the ideal remedy. Unless there is a good reason for haste, dilatation should be gradual and continuous. Rapid dilatation is usually followed by severe reaction, which often results in more ultimate harm than good. For strictures of smaller caliber than 20 French, flexible bougies should be used. In the hands of the inexperienced, the steel sound of small caliber is a dangerous weapon, capable of perpetrating an untold amount of damage; and even in the hands of the expert it is not altogether harmless. How often the sound should be used, how long it should be kept in the canal, and how deeply it is to be inserted depends on the individual case, and should be determined by the experience and judgment of the surgeon. The rule is, the tighter and more obstinate the stricture the more frequent the dilatation. In the very tight and obstinate stricture, I sometimes dilate every day, but as soon as it has been stretched up to 23 or 24 I dilate every

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other day, or at greater intervals, keeping the instrument in place several minutes. Ordinarily it will be found advantageous to let the sound enter the bladder.

Strict asepsis is a *sine qua non* to the successful treatment of stricture. Steel sounds are best sterilized by boiling. Soft instruments need not be boiled. The cheaper grades cannot be boiled. Plenty of soap and warm water will cleanse them thoroughly. All instruments should be cooled before they are introduced. The surgeon's hands should be clean, the glans and meatus of the patient likewise, and the insertion of the instruments should be preceded and sometimes followed by a cleansing irrigation of the urethra. These measures will prevent untoward results. Glycerin is apt to prove irritating, and it is also difficult to keep sterile. Ointments do not lubricate. The best medium is one of the Irish moss preparations on the market. They come in collapsible vials, can be kept sterile, do not irritate, and are always fresh and clean.

A cardinal requisite is gentleness combined with patience. A sound never should be driven through a stricture by force. The dilating sound should have just a little larger caliber than the lumen of the canal at the stricture; and the small amount of dilatation necessary for the sound to pass the stricture will be afforded by the weight of the instrument, combined with the resilient tendency of the stricture. All that is necessary is to hold the point of the instrument firmly and gently against the orifice of the stricture, and the stricture will suddenly open, admit the sound, and then close upon it with a firm grasp. Very often this grasp is so firm that considerable force is required to withdraw the instrument—much more than is ever permissible or necessary for its insertion.

The interval between the passing of the sounds gradually should be increased, so that when an instrument of 28 or 29 French caliber can be accepted, once a week is quite sufficient. This interval gradually should be increased until we are certain that the stricture shows no immediate tendency to recontraction. The prophylactic passing of the sound several times a year should be begun at that time, and continued during the life of the patient; otherwise a recurrence can be expected.

For strictures that are too tight to permit the passage of small-calibered soft sounds we must resort to the filiform bougie. The whalebone filiforms are the best and most serviceable. These instruments are about two feet long—very fine at the end and gradually dilating to a firm body. The greatest care is to be

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taken lest the fine point of these instruments enter one of the lacunæ magnæ, or one of the numerous follicles or false passages in the canal. A false passage is very easily made with them, but this need not occur if due care is exercised.

The LeFort filiform is extremely useful in these cases. It consists of a filiform threaded at one end, which can be attached to a metal or rubber catheter of varying size, with a corresponding thread at its curved end. The filiform having passed through the stricture into the bladder, the metal catheter is screwed on and both the filiform and the catheter following it are pushed into the bladder, thus dilating the stricture. After a few moments the catheter is withdrawn, a larger size is attached to the filiform and thus gradual dilatation is continued up to the point at which a fairly large sound can be introduced without the use of a filiform.

When it is found that the tip of the filiform cannot be made to enter the orifice of the stricture, it is well to fill the urethra with sterile olive oil and pass a number of filiforms down to the stricture in rapid succession, in the hope that one of them will engage the stricture orifice. When this method fails, a urethroscopic tube can be brought down to the stricture and a filiform can thus be guided by sight into the stricture orifices.

When the meatus is so small that a fairly large sized sound will not pass through it, it must be enlarged (meatotomy). Nothing is gained by forcing large sounds through a tight meatus, thereby causing additional trauma, besides inflicting considerable unnecessary pain on the patient. Meatotomy can be done painlessly and quickly, and the annoyance during healing is far less marked than the tortures of pushing a large steel sound through a tight meatus. When, however, the patient refuses to consent to the meatotomy, we must resort to the use of the Kollemann or Oberländer dilators.

These instruments can pass through a very small meatus, and are dilatable up to about 45 French. The dilating portion is covered with a thin rubber sheath. The Oberländer dilates in one plane only—from above downward—the patient lying on his back. The anterior dilator is a short, straight instrument, while the posterior dilator is curved to resemble the urethral sound. The Kollmann dilates in two planes—*i. e.*, they have four arms—and of course have this advantage over the Oberländer. These, too, have an anterior and a posterior variety. They have been modified so as to include an irrigating apparatus, thus permitting of the irrigation of the canal simultaneously with its dilatation.

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The Kollmann dilator is to be preferred over the steel sound especially in the strictures of large caliber in the anterior urethra.

In certain cases where the meatus is dilatable, but contracts quickly, it is sometimes well to use the double taper sound. Once the largest diameter has passed the meatus, the shank is reduced in diameter, and the meatus is spared the dilatation that is being administered to the canal proper.

Forcible Dilatation at one sitting is not to be recommended, except in unusual cases where great rapidity in dilatation is the essential desideratum. The dilators just mentioned are the best instruments for this purpose. The process is usually accompanied by pain and hemorrhage, and often by shock and urethral fever. This method is rarely used in practice.

Favorable results have been reported by the use of electrolysis, but it has not commended itself sufficiently to do away with the well-established method of simple dilatation by sounds.

Cutting Operations for Stricture

Urethrotomy, or cutting through the stricture, should be done only when dilatation cannot be employed with success. As a rule, most strictures in the penile portion of the urethra can be cured by gradual dilatation; but in other portions of the canal, such as the deep urethra and the balanic portion, the cutting operations are to be preferred.

For stricture at the meatus, dilatation is of little or no value. Here meatotomy is indicated..

These strictures are quite common. Usually they are congenital, but many are due to gonorrhea and to trauma. A chancroid or chancre at the meatus may leave behind it a stenosis of the fossa navicularis, which may be rebellious to treatment by dilatation.

The narrowing may be found at the anterior or posterior meatus, or in the fossa between the two. It can be determined only by the use of the bulbous bougie or the Otis urethrometer. The ordinary sound does not help us in this condition, for it often passes through without giving the slightest evidence of the existence of the constriction.

Any remedy that does not readily admit a bulbous bougie, 28 French, may be said to be stenosed. This does not necessarily indicate that a meatotomy is immediately necessary; it does mean, however, that a prolonged and apparently incurable anterior urethritis is often kept up and prolonged by the stenosis at the meatus; or that the pains and abnormal sensations felt by the

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patient at or near the meatus may be, and usually are, due to the existence of this stricture; at all events it is impossible to pass a large-sized sound for the treatment of stricture into the urethra. For all of these conditions, incision of the stenosis (meatotomy) is indicated, and will often accomplish what no other method of treatment has been able to do.

The operation is a very simple one, but it is often done in such a manner as to leave the patient no better than before the operation. In the first place, the incision is not made big enough. When the cut is freshly made, the meatus should be able to admit a bougie at least 32 French in diameter. It will contract to 28 or 29. This is the maximum size required for the treatment of stricture in the penile urethra, as a rule.

A second fault is the failure to cut the stenosis at the posterior meatus. It is not sufficient that the external meatus has been incised. The bougie should be passed through the second meatus, and if it catches in the slightest degree, the incision must be carried backward to include the internal as well as the external meatus.

A third fault sometimes observed is due to the too steadfast adherence to the rule, always to cut toward the frenum. When the meatus already reaches very near the frenum, any further incision in the same direction creates an artificial hypospadias. This can be avoided by incising the meatus upward and avoiding the floor of the urethra as much as possible. With these three possible errors avoided, the operation is sure to be successful.

The best instrument for the purpose is a straight bistoury, having a blunt point. Some surgeons do the operation without local anesthesia. This, however, is an unnecessary cruelty to the patient, for the analgesia can be made absolute with very slight effort. I prefer to inject a few drops of ½ per cent, alypin or novocain into the tissue near the meatus.

The bistoury is now inserted as far back as is deemed necessary, and the incision is made sufficiently large to admit a bougie, 32 French. It is well now to irrigate with hot antiseptic solution and insert a large-sized sound for not more than an inch or two. Better results are obtained if the edges of the incised mucous membrane are brought together by a few silk or horsehair sutures. This controls the bleeding and hastens healing. When the sound is removed, the meatus is packed with a little pledget of cotton, moistened with boric or mild bichlorid solution. If there is much bleeding, it will be readily controlled by packing the meatus with cotton upon which has been placed a

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liberal supply of glutol (powdered formalin gelatin). The patient is instructed to insert a fresh cotton plug after each act of urination; it is well to give him some of the glutol for use at home for this purpose if there is much bleeding.

The large sound should be passed every other day thereafter, otherwise contraction will take place quickly, and nothing will have been gained by the operation. It is also well to have the glans penis tied tightly after each urination, to prevent secondary hemorrhage. An important point to remember is that the coexistence of an active acute urethritis is no contra-indication to the performance of this operation. On the contrary, it will provide better drainage for the inflamed canal, and will prove of the greatest value for the urethritis *per se*.

Not infrequently we encounter refractory cases. They simply refuse to dilate or stay dilated. In these cases a cutting operation is required; likewise in those instances in which rapid dilatation is desired in a stricture with small caliber and a tendency to obstinacy.

The purpose of the operation is to divide the scar tissue, and separate the divided edges so that a new deposit of scar tissue shall become interposed and thereby widen the original stricture. After the stricture has been cut to the desired measurement, it is kept dilated by the constant and persistent use of steel sounds.

The instruments used for the purpose are of the antegrade (cutting from before backward) and retrograde (cutting from behind forward) varieties. The Maisonneuve urethrotome is the most popular of the former type, while the Otis dilating urethrotome is the most commonly used of the latter type.

In this country the most popular instrument for the division of stricture in the pendulous urethra is the Otis urethrotome. With this instrument the stricture is dilated up to the desired point, and then the knife is passed through, thus cutting the stricture and any other tissues with which it comes in contact.

This instrument cannot be used in strictures with a caliber less than 14 French. This disadvantage is overcome by passing filiforms, whalebone bougies and silk woven bougies, up to the point when the urethrotome can be passed through the orifice of the stricture.

Urotropin or salol is administered a few days before the operation. The operation can be done painlessly by filling the anterior urethra with a 2 per cent. solution of alypin or novocain and held there by the patient for five minutes. The canal should

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be thoroughly irrigated before cutting; in the presence of acute inflammation, of course, any operation is out of the question. All cutting must be done on the roof of the urethra, for anatomic reasons. The instrument should be dilated up to 31 or 32 French, and the knife drawn forward and out of the meatus, cutting the strictures and the meatus up to the point of dilatation. One cut usually is sufficient. After incision has been completed, the urethra and bladder are irrigated with warm sterile solution, a full-sized sound is passed and retained for a minute or two. This helps to stop the bleeding. The bladder is now emptied, and the operation is complete.

Some surgeons tie a catheter in the urethra and keep it there for a day or two to insure bladder drainage. I believe, however, that the catheter acts as a foreign body in the urethra, often giving rise to acute non-specific urethritis. Besides, it does not accomplish the purpose for which it is employed—namely, to prevent the urine from coming into contact with the wound in the urethral canal. The urine manages to get outside of the catheter in spite of all precautions. However, if urethral irrigation is persisted in, and a good urinary antiseptic like urotropin, salol, or helmitol is administered internally, there is slight danger of urethral fever or other complications.

Sounds should not be passed for three or four days after the operation; thereafter they should be passed every other day, to keep the wound open. When the withdrawal of the sound no longer is followed by hemorrhage, we may feel certain the wound has healed; from that time on sounds should be passed at greater and increasingly greater intervals to prevent recontraction.

Immediately after the operation it is wise to apply pressure to the wound, by applying a splint to the penis. On either side of the penis a splint of cardboard or thin wood is applied, the outer skin of the organ being well protected with absorbent cotton. The splints are held in place by adhesive plaster strips. The splint is covered with a tight bandage. It is important before leaving the patient to see if he can void his urine; for in this way we know whether or not the splint has been applied too tightly to permit the passage of the urinary stream.

Secondary hemorrhage following internal urethrotomy is not rare, especially when frequent erections occur. If the cutting has been done within five inches of the urinary meatus, blood will appear at the meatus. If the incision is further back than five inches, the hemorrhage may be concealed and may cause considerable damage before it is learned that blood is flowing

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into the bladder. It is therefore a good rule never to do an internal urethrotomy unless the stricture is situated in the anterior urethra, so that any secondary hemorrhage may be detected quickly.

Hemorrhage is best arrested by inserting a catheter or hollow metal sound into the bladder and applying pressure around the penis. Or a T-bandage may be applied very tightly, with a pad over the perineum and the penis, the latter resting on the pubic symphysis. It is well to keep the patient in bed for a day or two after the operation, if there is any fear of hemorrhage.

Littritis and Folliculitis.—The second prime causative factor in chronic anterior urethritis is the presence of a chronic infection of the numerous glands and follicles in the urethra. Because of the absence of definitive symptoms and the relative frequency of this insidious form of infection, these glands are of great importance in this connection. The diagnosis is made by the use of the urethroscope. If the gland openings are clear and patent, the condition is designated chronic littritis; if pus is present and small abscesses have formed we are dealing with a chronic folliculitis.

The diagnosis having been made urethroscopically, treatment consists in isolating these infected follicles and treating them individually through the urethroscope. The most effective and at the same time the most common method is to touch up these inflamed orifices with a 10 per cent. solution of silver nitrate on a cotton carrier. Electricity in its various forms, ionization, fulguration with the D'Arsonval current, all of these and many other methods have been advocated with more or less success. The silver nitrate treatment, however, usually is the most effective. Associated with these local applications dilatation with the Kollmann anterior dilator or large-sized steel sounds, will be found of the greatest value. Occasionally excellent results will follow massage of the penis while the steel sound is in the urethra. This has the effect of emptying the congested follicles of their accumulated pathogenic secretions. Of course the local employment of the silver salts and astringents will constitute a most useful adjuvant to the endoscopic and dilatation treatment. There is no internal medication that has any therapeutic value in this condition.

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Life's Thermometer

Appreciations and Depreciations, Registered by Our Readers.

From the Medical Historian of Champaign

To the Editor: I have finished reading "The Don Quixote of Psychiatry," and fascinating is certainly none too strong an adjective to express my admiration for the book. However, the fact that I am familiar with some of its characters and likewise with most of the field in which the narrative is laid may have had something to do with the great satisfaction I had in reading the work.

I never heard of Dr. Clevenger's "Disadvantages of the Upright Position" till you referred to it in your letter. Moreover, until I read your "Don" I could not recall that I had ever so much as heard of Dr. Clevenger—then, however, came the recollection that the man who superseded Dr. Richard Dewey at Kankakee bore that name and was referred to in the newspapers of that time.

Poor Dr. Clevenger! He was born in the same year that I was (1843, he in March and I in October), and like myself was a Civil War soldier. I take it he is no longer in the land of the living. As to myself, I am very much alive. I have made many mistakes, but I never have wasted my time fighting wind-mills. From your narrative I can but think that had Dr. Clevenger concentrated on some one thing and worked at it industriously he would have made especially good.

I greatly enjoyed your portrayal of the faculty-members of the Chicago Medical College, most of whom were for a season my teachers about fifty-four years ago. In that day medical students were wont to look upon Dr. Nathan Smith Davis as a sort of superman, yet your reference to his extreme narrowness in several particulars I today regard as correct. Dr. Edmund Andrews I always admired. He was big-bodied, big-brained, big-hearted and an all around scholar.

I enjoyed your viewpoint in certain other matters. Your "dig" at Rev. Thomas Dixon does not (or did not) ruffle my feathers a particle; neither did your reference to the fiery south-

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ron of sixty years ago as the "proprietor of negroes and father of mulattoes."

I am glad that Dr. Bayard Holmes, a friend of mine, is writing his reminiscences in your columns. I was a classmate of Dr. Norman Bridge in the days when we were both poor but honest. Well, I am poor yet, but Bridge is a multi-millionaire. However, when I meet him it is with a slap on my shoulder and a "Hello, Johnson!" Which reminds me of Dr. Frank Billings, one of the biggest medical men Chicago has ever known, and notwithstanding seems delighted to occupy a place in the all-the-rest-of-us class.

Well, I have filled this sheet and must needs close. Kindly write me.

CHARLES BENEULYN JOHNSON, M.D.

Champaign, Ill.

[This personal letter of friendly chat contains so many interesting reminiscences that we could not resist the temptation to present it to our readers. We have recently seen a lengthy and accurate review of the "Don Quixote of Psychiatry," which Dr. Johnson wrote without having the book before him—which speaks well for a man who was born in 1843. Dr. Johnson, who was president of the Illinois State Board of Health during 1899-1902, is the author of *Medicine in Champaign County* (1909), *Muskets and Medicine* (1917), and *Illinois in the Fifties* (1918). Dr. Johnson is now preparing his autobiography, *Fifty Years in Medical Harness,* for publication in MEDICAL LIFE.]

The Blunt Lancet

To the Editor: I am leaving my present pastoral post in September at the latest, and am returning to Louisville, Kentucky, to live in my own house. In the meantime I shall be retiring from the active ministry of the Church, for a little time at least, and am going to give more direct attention to the sex-problem, especially as it is connected with the ever-widening spread of venereal disease.

If there is one thing that must be checked, if indeed it is not to be eliminated entirely, it is this particular spread. Whether it is absolutely true or not, we are constantly being told that 80 per cent of our young men of today are affected with venereal disease, and this means, of course, that an enormous percentage of women are affected from these men.

Some method must be found to very considerably lessen this disease, for no method has been found as yet. Lectures with

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diagrams, etc., will have no more effect in limiting the spread of this disease than, for instance, would good lectures on the danger of eating too much candy have on lessening the consumption of that commodity which increases yearly. In my native city of Liverpool, England, there was in the heart of the prostitute's district a fine museum devoted to the exhibiting of wax human-like figures representing all stages of venereal diseases. It had no more effect in limiting prostitution than the occasional sermons and lectures on the subject. Similar museums have existed for years in other towns and cities with the same result.

There is but one way to limit venereal disease, a reform in marriage. Most men and women should be married between the ages of eighteen and twenty-two, and they should possess the full knowledge of how to regulate cohabitation either as an act of love or of procreation.

As in so many other cases, it is the Church which here stops the way to beneficient reform. We must not forget, however, ignorance, prejudice and old-fashioned dogmatism existing apart from the Church. For instance, I well remember many years ago being asked by Canon Barnett, of Toynbee Hall, London, England, to meet the editor of the London *Lancet* to talk over the subject of the limitation of children. With his back to the fire, and coat tails under his arms, he laid down the law to me on the wrong I was committing even to think of such a thing as the prevention of offspring in the act of cohabitation, adding, "If the young people cannot afford more children, let them occupy separate rooms, or, at least, separate beds." Comment is useless, yet there still exist eminent medical men, one known to me especially, holding the same view. It merely shows that very much has still to be done along these lines.

Rev. ARTHUR E. WHATHAM.

Haliburton, Ontario, Canada.

A Protest Against Serum Therapy

To the Editor: This riotous hysteria of serum and anti-toxin so-called treatment cannot last. It is cruel, criminal, inhuman and unscientific, and absolutely not in harmony with natural philosophy and natural law. Therefore serum therapy cannot be considered good philosophy for the regular school of medicine, but is in the abstract Homeopathic philosophy. In these expressions I have somewhat leaned upon Boerhaave's teachings, which should receive thoughtful consideration by men that care.

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I wish to compliment you on MEDICAL LIFE—it is indeed an oasis on the desk of thoughtful physicians; it refreshes and stimulates, and in fact makes a fellow feel that there are still some men in our profession who have not lost their individual orientation. Your influence for historical medical teachings from month to month, especially upon the younger generation of doctors, will be of the greatest importance, and for the benefit of mankind.

JACOB GLAHN, M.D.

Owensboro, Ky.

A Lost Reader

To the Editor: I have been receiving MEDICAL LIFE as a holdover subscriber to the *American Journal of Urology and Sexology,* and I want to have my name discontinued on your mailing list. The sex article in the April number is such twaddle that I am surprised that you can print it. This reverend's view on the subject of sexual gratification in women puts him in the kindergarten class. Were he a doctor or a lawyer he would know that 90 per cent of divorces grow out of female frigidity, and that it is by no means unimportant what their state is. This man should be in a pulpit talking about heaven, God, and the virginity of Mary, not writing for a scientific paper.

JAMES W. WALKER, M.D.

Chicago, Ill.

An Appreciation

To the Editor: I think that MEDICAL LIFE is a distinct and unique publication, of the greatest professional value. It is extremely useful and intensely interesting. I believe it has a permanent place in our lives as well as in world-wide literature.

BAYARD HOLMES, M.D.

Chicago, Ill.

Suggestion for Articles

To the Editor: I wonder whether there are not other evils as important as the garage evil in Washington that could find space for exposition in your journal. I am sure you will agree with me that our physician brothers are sadly lacking in social consciousness. Why not have that as a theme for one or more articles?

IAGO GALDSTON, M.D.

New York.

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SECTION ON

HISTORICAL MEDICINE

An acquaintance with the history of his science is, however, especially indispensable to the practical physician, if he would thoroughly comprehend and penetrate the secrets of his profession. To him, indeed, it is the bright and polar star, since undoubtedly it alone can teach him the principles of a medical practice independent of the currents, the faith and the superstition of the present. Moreover, it offers him as scientific gain, through the knowledge of the past, the measure for a just and well-founded criticism of the doings of his own time, places in his hand the thread by which he unites past conditions and efforts with those of the present, and sets before him the mirror in which he may observe and compare the past and present, in order to draw therefrom well-grounded conclusions for the future.

J. H. Baas.

1921 JULY 20 Pages

THE DOCTRINE OF THE NATURAL CONSTITUTION

By Max Neuburger, M.D.

Professor of Medical History, University of Vienna.

The problem of the bodily constitution and the pathological disposition is one of the questions most discussed in the pathology of the present day. It may even be said that the medicine of our day is in great part determined in its form by the conception of constitution. Pathologists and clinicians, anatomists, embryologists and physiologists unite their forces for the exact motivation of the constitution doctrine. The total matter of diagnosis and treatment of diseases is now connected with the consideration of the constitutional moments.

Medical practice has always had to consider the pathological disposition in the etiologic and prognostic determination of a special case, but medical science—dominated by the anatomic-local principle and extreme etiologism—has for decades neglected the pathological disposition. Only the seat of the affection was considered and afterwards the causes thereof. The term constitution, however, had become downright obsolete in a past not too long ago. This holds good especially of German medicine, the representatives of which for a time went so far as to com-

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pletely deny the influence of constitutional elements on the origin of diseases.

At this moment when the work of the most modern investigators again takes up the broken threads of tradition, those numerous experiments naturally gain greatly in historic significance, which the past—true, with altogether insufficient aids—undertook for the solution of the fundamental problem of the pathologic doctrine.

The old experience which ever and again forces itself on us that the various individuals in regard to pathological irritants show a greatly varied susceptibility and reaction, formed the beginning of the constitutional doctrine and that, therefore, the origin and course of the affections are not determined only by outer factors, but by inner ones as well, lying in the inner organism. Wherein these consist it was sought to deduce from the then prevailing fundamental physiologic-pathologic view, but an important part, outside of these logisms, was played by conclusions drawn empirically.

This two-fold origin, based on speculation and observation, may already be found in the writings of Hippocrates, which, corresponding to their individualizing direction in therapy and corresponding to their pronounced prognostic tendencies, repeatedly emphasize the importance of the constitutional moment. With Hippocrates the constitution is something congenital; it cannot be changed as to nature and only slightly modified by mode of life. He distinguishes the good and bad constitution, the strong and the weak one, and the flabby, fat and moist one from tight, compact and dry one.

The various constitutions dispose to certain affections and influence the critical symptoms of acute ailments. It is especially worthy of note that Hippocrates occasionally states, as recognition marks of constitutional weakness, definite local anomalies, certain organic changes and functional disturbances. The description of the *Habitus phthisicus* is particularly exemplary in this regard. Besides these results of sober observations, however, there are more or less sharply formulated natural-philosophical ideas to be found in the writings of Hippocrates, and it was just these, the theory of the four elements, qualities, humors, which afterwards developed into a schematic formula by the dogmaticians, determined the further development of the constitutional doctrine.

In this respect the book *de natura hominis* comes into particular consideration, in which the four cardinal humors (blood,

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mucus, yellow and black bile), corresponding to the four elements or qualities (warm, cold, moist, dry) are set down as constituents of the body, the right mixture of which constitutes health and their incorrect relation to one another dyscrasia, sickness. Here we must look for the source not only of the crasia theory, but of the doctrine of the four temperaments as well, the sanguine, choleric, melancholic and phlegmatic ones, which in many variations for many centuries comprised the beginning and end of the doctrine of constitution. According to this, there exists in each individual within the bounds of health, a certain preponderance of the one or the other elementary quality (cardinal humor) by which the susceptibility for the injurious irritant of the corresponding outer element is given, and therewith the disposition to a certain group of affections. Each organ has its own temperament, its own crasia—that is, its own constitutional quality.

Galen, who perfected the temperamental doctrine, deduced the pathological tendencies from the four simple and four compound fundamental temperaments—that is, the elementary qualities (warm-dry, cold-dry, warm-moist, cold-moist) and left a book *de optima corporis nostri constitutione,* in which the normal constitution is traced back to the right mixture of the homogeneous parts and symmetry of the organs. From this book, by the way, it may be learned that just in the field of the constitutional doctrine, even at that time, a terminologic confusion had appeared which still prevails. Galen's authority acted in favor of the humoral theory and forced into the background the second chief medical view of ancient times, methodism, which did not look for the cause of an ailment in dyscrasias, but in the status strictus or laxus, and accordingly in the tonus of the solid parts (increased or decreased tension). Medieval medicine moved in Galen's track and developed the theory of temperaments or complexions more and more subtly by scholastic distinctions; it was of lasting value, however, that in the origin of affections the endogenous factors—taken together as *res naturales*—were never left disregarded.

In the time of the renaissance and in the seventeenth century, to be sure, the ancient-medieval temperament doctrine underwent considerable transformation, but the constitution conception scarcely gained a firmer basis by venturing to explain the nature of the individual bodily constitution by the preponderance of one of the Paracelsus elements (salt, sulphur, mercury), by the predominance of acid or alkaline humors, etc., or, equally arbitrarily, by the tensity and laxity of the fibres of the tonus. Fr. Hoff-

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mann's attempt, for instance, to make the variety of temperaments and the disposition to ailments depend on the energy of the blood circulation belongs in the same category, though ranking somewhat higher; morborum dispositionem petendam esse ex hominis natura vel temperamento seu rectius mechanismo corporis sive clarius ex circulo sanguinis.

Opposed to such a priori constructions the impetus to a wholly different classification of the constitutions had in the meanwhile been given by clinical observations. Particularly in the study of scrofula and phthisis, since the time of Sylvius, the thought obtruded itself that origin presupposed a special disposition, a peculiar constitution anomaly which prepared a favorable soil for the outer irritants. Proceeding from this it was a posteriori begun to suppose specific constitution anomalies (diatheses) for other affections, also where heredity was striking; thus, besides the scrofulous constitution, an arthritic, an apoplectic, and further a carcinomatous, etc. Of course, wide play was given to the views of the various authors and the term constitution was used in a varied sense, and frequently confused with the conception of predisposition with the latest pathological tendency (diathesis), and even dyscrasia. But it is worthy of appreciation that much zeal was devoted to establish the habitus, namely, the outer systems of the genuine or supposed constitution anomalies, therefore to give a more positive character to research.

However, the philosophic experienced investigator of the eighteenth century could not find full satisfaction in the study of the mentioned constitution anomalies, and it is only too natural that, under the influence of Haller's physiology, it was begun anew—in the change of the pathologic systems so rapidly succeeding one another—to retrace the constitution on the whole, the normal and pathological one, to a biological fundamental formula. Occasion was given for the revival of the constitution doctrine by the phenomena of irritability, sensibility, nervous strength, vital power, etc.; the difference of the individual bodily constitution and pathologic disposition was easily to be deduced from the gradual relations of these supposed powers.

At all events it was of importance that since the last decades of the eighteenth century the position heretofore withheld was given to the nervous system in the doctrine of constitution, be it, whether the nature of the constitution was exclusively seen in the specific irritability or excitability, or whether a nervous

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constitution was set down eclectically next to the sanguine (plethoric), phlegmatic (lymphatic), bilious one.

It cannot awaken surprise that later, when an ever richer literature on this theme developed, a greatly varied interpretation, grouping and shading of the constitutions is found among the various authors—tot capita, tot sensus—and it would lead too far to enter on the numerous opinions expressed. Let only so much be said that in the first decades of the nineteenth century a fundamental classification of the constitutions (temperaments) was undertaken mostly according to the alleged predominance of a biological fundamental function (sensibility, irritability, reproduction), of a body region, an organic system, quite particularly, however, according to the preponderance of the blood vascular system, the lymphatic system and the nervous system; and to these chief groups those constitution anomalies were added which tradition had transmitted and which had been taught empirically.

As an example such a classification of constitutions, chiefly according to Puchelt (1823) shall be mentioned. The arterial constitution rests essentially on the predominance of irritability which is particularly shown by an intensely reddened blood, rich in fibrous and coagulous elements, the formation of which proceeds often and rapidly in relatively too large a quantity (const. plethorica). The arterial constitution appears in two forms which may be designated, in regard to the various temperaments, a sanguinic-arterial and choleric-arterial. The sanguinic-arterial constitution is mostly to be met with in young people before complete bodily development and is to be recognized by a rather frequent, easily irritated, but not a hard or strong pulse, by rapid, easily impeded respiration, quick digestion, abundant evacuations, great excitability, by a habitus more or less resembling a phthisic one. This constitution causes the tendency to congestions, hemorrhages, fever, catarrhal and rheumatic affections and makes the course of the disease tempestuous. The choleric-arterial constitution which is commonly called the robust one, or with a very vigorous body, the athletic one, is recognized by a strong, slow pulse, slow and deep respiration, great appetite, good digestion, abundant evacuation, coarse feces, concentrated urine and similar symptoms of a life full of energy. It appears often in men of middle age and favors the origin of diseases far less than the other constitutions; on the other hand, possibly appearing ailments will under its influence very easily gain a high degree of intensity and violence.

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The venous constitution is divided into the phlegmatic-venous and atrabilary one according to the combination with the phlegmatic or melancholic temperament. The atrabilary constitution appears most frequently in men of choleric, and particularly melancholic temperament at advanced age. It is mostly expressed in a spare frame of body, dark hair and eyes, slow circulation, deep respiration, slight appetite, frequent indigestion, and easily appearing disturbances of the general health. It is the cause of many affections, particularly pathologic dilation of the veins, varix, stagnation in the portal vein, liver troubles, hemorrhoids, stony concrements, etc. The so-called gastric-venous, bilious, hemorrhoidal, gouty, scorbutic constitutions may be regarded as kinds of an atrabilary constitution.

The lymphatic constitution mostly corresponds to a juvenile age, and is caused by the predominance of the lymphatic vascular system and its glands, and by the predominant lymphatic character of the blood. It is most distinctly expressed in the scrofulous habitus, as it is also the disposition to all those ailments which are akin to scrofula or appear as consequences of it. At the age of manhood it is characterized by enormous formation of fat, sluggishness of the functions, reduced reactions of the general feeling.

The nervous constitution is based on the predominance of sensibility, but appears oftener in the female than in the male sex, and is generally expressed in a frail and delicate frame of body. It is the cause of a tendency to chronic nervous affections, and appears in three forms, as cerebral, spinal, gangleous-nervous constitution. The cerebral constitution is distinguished by a predominant activity of the mind and the senses, is often combined with other kinds of constitution, appears particularly at the age of childhood in the female sex, and disposes to congestions in the head, cerebral hemorrhages, insanity. The spinal constitution particularly favors the appearance of inflammatory affections of the spinal cord and of various kinds of convulsions. The gangleous-nervous constitution appears mostly in the male sex and at the middle age disposes to nervous, painful affections, disturbances of excretions, particularly in the abdomen, but also is often the cause of various fevers.

Hufeland differentiated the following constitutions (Enchiridion medicum, 6th edition, Berlin, 1842):

The plethoric, phlogistic, sthenic constitution—Predominant blood system, rapid and abundant sanguinification, full, strong pulse, redness of the face, abundant heat, energy in all ex-

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pressions of life, inclination to blood congestions, hemorrhages, infammations.

The adynamic, feeble, frail constitution.—Weak pulse, easily compressed, lack of heat, weakness of all functions, particularly the voluntary ones, easy fatigue and dyspnea in movement, the need of frequent restoration by food as well as fresh air, defective grade of excitability, either too high or too low, also of the secretions, either too severe or too weak. Tendency to adynamic affections, obstructions, profluvium.

The nervous constitution.—Predominating nervous system, great irritability and sensitiveness of body and soul, unequal and variable condition, inclination to convulsions and other anomalies.

The dry, tense constitution (constitutio rigida, sicca).—Firm fibre, dryness, leanness of the whole body, sparse secretions and excretions, highly colored urine, little and hard stools, dry skin, usually brunette habitus. Tendency to blood congestions, obstructions particularly in the abdomen and sthenic affections.

The flabby, spongy constitution (constitutio laxa, humida).—Flabby fibre, soft, flabby flesh, bloatedness, pale color, lack of heat, chilliness, generally blonde habitus, tendency to catarrhs, to mucous accumulations in all mucous excretion organs, the head, the chest, the abdomen, to serosis and lymphatic accumulations and extravasations, profluvium, obstructions, to incomplete crises, chronic character of the ailments.

The lymphatic, mucous constitution is identical with the former.

The gastric, bilious atrability constitution.—Irregular, incomplete digestion and bowel evacuations, constant tendency to indigestion troubles, obstructions of the bowels, hypochondria, with the bilious, pathological irritability of the liver, so that at the slightest cause discharges or obstructions of the bile appear; yellowish color with the atrabiliary constitution, dark urine, constipation, hemorrhoidal troubles.

The rheumatic-catarrhal constitution.—Weak, pathological sensitive skin, hence defective, easily suppressed skin respiration, great inclination to catarrhs.

The psoric constitution.—Defective skin secretion and vegetation, hence constantly dirty skin, constant inclination to skin eruptions and ulcers, hence the dermic schematism to be assumed in all affections and crises.

The venous hemorrhoidal constitution—Predominance of the venous system and the venous blood, particularly in the abdomen,

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the portal vein system, hence crowding of the same, hemorrhoidal congestions.

The phthisic constitution.—Elongated body, rapid growth, long neck, flat chest, pressed in thorax, wing-shaped protruding shoulder blades, irritable blood system, rapid pulse, circumscribed redness of the cheeks, hot hands after meals, tendency to congestions, easy breathlessness upon moving. Great inclination through life to pulmonary affections, pneumonias, coughing up blood, phthisis.

The apoplectic constitution.—Short, thick neck, thick head, set near the shoulders, short, squat body, disposition to head affections, apoplexy.

What was offered by the constitution doctrine after the middle of the nineteenth century were in reality only modifications and no essential innovations, and Henle's keen intelligence, Lotze's criticism and Wunderlich's clinical genius sought in vain to master the problem in a logical way.

Henle at one time defines constitution as a particular kind of disposition which is permanent in any case, and is mostly congenital or hereditary, and by no means important enough to be regarded as an affection in itself; at another time he says that the constitution is actually the disposition. He distinguishes between congenital and acquired constitution, such as is still within the bounds of the normal (robust, delicate, weak constitution), and such as already corresponds to a moderate degree of illness (apoplectic, lymphatic, florid constitution). "The examination of the nature of these last three named is not to be separated from the examination of the affections to which they dispose."

After a close criticism of the various conceptions and types of constitution Lotze arrives at the result that we have not succeeded in tracing the very numerous varieties—which prevail for certain affections in respect to disposition—to a positive, generally valid basis of a few anatomic relations. The physician must learn the true disposition from the history; it alone will reveal the habitus to him and that which cannot be expressed by the habitus, the locus minoris resistentiæ.

For Wunderlich the constitution is the sum and substance of the total organisatory relations; irritability, the functional principal symptom of the constitution is fluctuating throughout. He distinguishes, firstly, the strong constitution; secondly, the irritable constitution: cerebral, spinal, catarrhal, bilious, plethoric, weakly-anemic; and thirdly, the flabby constitution: venous, lymphatic, fat, simply-asthenic, imbecile-like.

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While French medical science continuously strove to modernize the doctrine of temperament, and even further developed the theory of diathesis on a clinical basis (Bazain, Lancereaux), an epoch set in for German pathology in which the constitution conception was excluded from scientific discussion. The fall of the crasia doctrine, the victory of the localization principle, or else organicism, made tabula rasa of the "universal affections" and accordingly withdrew all foundation from the historical conception of constitution. Virchow, to be sure, was far removed from Cohnheim's radicalism, as in his work on Pathological Tumors a part treats of the constitution (scrofulous disposition), although in the sense of the localization idea.

Its fate was sealed even further by the arising bacteriology, and a phantom existence at best was granted to it in a few text books. If "constitutional affections" were still spoken of, the reason lay in a wholly mistaken application of the conception (for instance, in syphilis), or in the circumstance that it was not able to enter the affections in question (gout, fatty degeneration, diabetes) into the system of disease, or that better designation was missing.

Medical practice, to be sure, daily encountered the reality of the constitutional factor, and always had to draw it into etiological and therapeutic account, even though strict science could not give a definition thereof. Softly, however, and at first little noticed, the way for the revival of the constitution doctrine was again prepared. From the mortuary chamber where the old doctrine fell into ashes, from the laboratory, the work-shop of the clinician, a new conception of constitution is proceeding, which harmoniously combines the results of modern, exact investigation with the happy inspirations of the past.

Vienna.

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VENESECTION IN TALMUDIC LITERATURE

By Aaron Brav, M.D.
Ophthalmic Surgeon, Jewish Hospital.

Phlebotomy is an operation used for the purpose of diminishing the quantity of blood either in some localized part of the body as by leaching, or in the entire circulatory system by venesection. Bloodletting was a common practice in ancient times. This operation was occasionally performed for curative purposes, but was largely employed as a prophylactic agent to prevent disease and conserve health. From the frequency of this operation in the past one is led to the conclusion that the Jews must have been robust and plethoric and not the nervous race they are today.

Venesection is still resorted to by the medical profession, especially the drawing of blood from a hyperemic area. This is accomplished by means of leaches. Not infrequently, however, venesection is resorted to to relieve the circulatory pressure and to remove and neutralize some toxins in the blood. In ancient times there were special institutions or establishments in every large community. In fact, some of the Talmudic teachers say that no learned man should reside in a community where there is no specialist for bloodletting (Sanh 17b). Among the medical expenses that the husband has to pay for his wife according to the Talmud is that of venesection (Keth 52b). In speaking of the pain associated with this operation Raba says that Rabbi Nachman appeared to him in a dream, telling him that the suffering incidental to death is no greater than the pain from bloodletting (Moed Qat 28a). The women again describe the pain by comparing it to the pain associated with the first sexual relation (Keth 39b). Dreaming of venesection was considered a good omen (Keth 39b).

The only opposition to the practice of venesection is to be found in the biblical injunction, 'Ye shall not make any cuttings in your flesh for the dead nor permit any marks upon you (Lev. xix-28), which according to Rab Bibe Bar Abaje includes the cutting for bloodletting purposes (Makk 21a).

The frequency of bloodletting, which by the way was not performed by the medical profession, resulted in the development of a special profession something akin to the leecher and cupper of our own days. In Talmudic literature, he is known by the

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title of Umnon or mechanic, which corresponds to the mechano-therapist of today (Kid 82a). Occasionally he is spoken of as Cara (Dereh Eretz Zutta X), meaning diminisher, because he diminishes the quantity of blood. The Umnon or phlebotomist was not of very high standing in society. Outside the sphere of his activity he was held in ill repute. The word Umnon is also used to indicate dexterity or expertness; in such cases, however, it is used as an adjective and not as a noun. Socially, he was classified as a workman. As a result of his calling which is associated with blood he is often classified with the butcher, (Baba M 97a)., The head of the School of Pumbaditha would not admit him to his house, but would go to his establishment (Ber M 97a). We may judge the ill repute of the Unmon by the fact that he was not eligible for election either as president or trustee (Epitropos), of the community. He could not serve as king nor high priest, not on account of any physical defect, but on account of his calling. Because people trust their lives into his hands, he is proud; because of the habit of eating with his patient, he is a miser; the desire to be kept busy awakens in him an opposition to those who are habitually well; and because of his frequent association with the female sex, he is immoral and untrustworthy (Derech Eretz Z. X). Ten uncomplimentary attributes are ascribed to the Umnon. They easily account for the ill repute in which he was held. He is arrogant, ambles as he walks, assumes a haughty posture in sitting, is niggardly, he eats much and passes little; nor does he scruple in committing adultery, robbery, and murder (Kid 82b). The Talmud quotes one exception to this rule and praises the Umnon Abba as a God-fearing, righteaus man. In his establishment are found separate rooms for men and women. He uses a special operative gown for his female patients so as not to expose any but the necessary part for the field of operation. He has a special room containing the collection box, where the pay patients deposit the required fee, so that those who have no money suffer no insult. If a learned man consult him (Zorve Mederabonom) he takes no money from him, but he gives him money after the operation, saying, 'Go and strengthen thyself' (Taanith 21b). The money was for the required after-meal or post-operative meal.

Frequency of the operation.—Since the operation was performed for preventive purposes, one would naturally expect its performance to be of actual value quite often. One may think of the present-day preventive injections, which must be repeated at certain intervals. It is well, however, to mention the fact that

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bloodletting in the Talmud is considered beneficial when moderately used, but when used to excess is very harmful (Gitt 70a). Efforts have been made to limit the frequency of bloodletting to certain definite periods. According to Mar Samuel, a physician in the third century, the operation should not be performed more than once a month. After the age of 60, the interval must be at least three months (Sabb 129a). Maimonides prohibits its use after the age of 59 (Hil Deoth 18a). Mar Samuel does not state at what age one should begin bloodletting, neither is there any mention in the Talmud as to its use in children. It is known, however, that it has been performed on children among the Egyptians. Galen and Hippocrates were against its use in children below 14.

The operation in the Talmud is spoken of as Hikkiz or Hikkiz Dam from Nakaz, which means sticking. Occasionally it is called Sekar or Sebar (Ab Z 29a). The act of performing the operation is described by the term of Ubad Miltha (performing a duty). The instrument used for venesection is known as Kusaltha Masmer, also Therpatha (Keth 39b). During venesection the blood was collected in a basin (Chispa deUmnon. Gitt 69a), or some earthen dish that was not used for any other purpose (B B 20b). Before the operation the patient delivered the following prayer: "May it please thee, Lord, my God, that this my project effect healing unto me and do Thou heal me; for, Thou, O God, are the true physician and thy healing is true." After the operation he offered the following short prayer: "Blessed be the Gratuitous Healer" (Ber 60a).

There is no definite statement as to the amount of blood one may draw by this operation; all we find is that one should know the necessary amount of blood essential for life. This is stated to be one-quarter of a Log. It was considered dangerous to go to that limit, lest it result in death (Sab 120a). The underlying basic idea for this practice is the idea current in those days, that all diseases come from the blood. The principal causes of disease is plethora or an excessive amount of blood. The principal therapeutic agent is wine. Where there is no wine there is need of medicine, for where there is no wine there are many diseases (B. B. 58b—).

Preliminary preparations.—The essential elements in preparing for the operation may be stated as follows: The patient must not be under the influence of liquor. He should not eat wheat bread, small fishes and kress nor drink vinegar before the operation (Ab Z 29a). The operation should be performed in a

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room the walls of which should be seven and a half brick deep so as to avoid catching cold. The story is told that Samuel once felt faint after a phlebotomy, and on investigation it was found that the wall of the operating room was only six brick deep (Sab 129). The operation should not be performed in the standing position. Violation of this rule may lead to a fatal issue. The following five conditions may result in death; eating, drinking, sleeping, cohabiting and bloodletting while in a standing position (Sab 129a). Bloodletting should not be performed on a man having some disease of the eye (Ab Z 29b). The operation should not be performed on a stormy or cloudy day nor after a heavy meal. It is also contraindicated at the acme of some febrile disease, although it is recommended in the second day of the fever (Ab Z 29b). As to the time of operation, we find that it is best to have it done on Sunday, Wednesday and Friday, but not on Monday and Thursday. The heavenly court is supposed to be in session in the last mentioned days, and Satan, the prosecutor of mankind, may take such advantage of it as to have it lead to serious results. There is also an astrologic reason given which involves the planet Mars. The Wednesday that happens to fall on the fourth or fourteenth and twenty-fourth day of the month and the last Wednesday of the month that has not at least four days for the completion of the month, all are considered very dangerous times for bloodletting. On the first and second day of the month venesection is very weakening, while on the third day of the month it is very dangerous. It is also forbidden on the eve of the biblical holidays. This is probably due to the fact that the strain and excitement incidental to the preparation of the day is so weakening that any additional surgical trauma may have serious results.

Post-operative, hygienic and dietetic regulations.—Rab and Samuel give very definite instructions and regulations that one must observe after the process of bloodletting. It is required that the patient rest a while after the operation, then rise and partake of a little food before he begins to walk. He is permitted to drink something after the operation; but he should wait for his post-operative meal for a period of time equal to what it would take to walk 1000 meters (Sab 129b). He should wash his hands carefully, for whoever omits this hygienic rule will worry seven days (Pes 112a). This probably could be taken as the period of incubation for some disease. Bathing after the operation is forbidden and is considered dangerous. It is essential to guard against chilling of the body. This was considered

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very dangerous, and individual cases are reported where, because no fuel was present, the furniture of the house was burned to save life (Sab 129a).

The most essential thing in the post-operative management is a nourishing diet, "He that fasts after phlebotomy his blood is on his head" (Derech Eretz Rab X). He that is indifferent in his post-operative zeal is regarded with indifference in heaven. One should sell his shoes and provide from the sale for the necessary articles for the post-operative meal. According to Rab, meat is the essential article of food. According to Samuel, wine is more essential. Red wine produces red blood (Sab 129a). The spleen which is rich in blood is recommended by Samuel. It is well to notice that even today the spleen is considered as the blood-producing organ. Drinking wine after the operation was a common custom. Rabbi Joseph drank until the wine reappeared in the operative wound. Rabbi Johannan drank until the wine could be smelled through the ear, while Rabbi Nachman drank until his spleen was swimming in wine (Sab 129a).

These stories are not to be taken literally, but are merely given to emphasize the value of wine in the post-operative meal. The quantity of wine is given as a quarter of a Log. The poor man who did not have the needed money for the purchase of wine is permitted to go from dealer to dealer, tasting wine in each shop until he got the required quantity. Wherever this was not possible, he was to substitute the eating of seven black dates and the rubbing of his temple with oil and the taking of a sun bath in order to get and keep warm (Sab 129a). Evidently the effect of the black date was equivalent to wine. Fowl was considered an inappropriate diet after phlebotomy, as it gives rise to palpitation of the heart. Big fish was considered a good article of food the day before and the day after the operation, but had to be avoided on the third day as dangerous. No reason is given for this rule. Milk, cheese, onions and kress were permitted after the operation. This was commonly known by the abbreviated term as Chagbash (Ned 54b), Ab Z 29a). The story is told of Rabbi Eliezer Ben Pedath, who was very poor. Following a bloodletting he ate an onion, with the result that he fainted (Taan 25a). The mischief done by the indulgence in the Chagbash formula, containing forbidden food, can be overcome by the use of an equal quantity of one-quarter of a Log each of wine and vinegar. Eggs were not permitted for the after meal. Special emphasis is placed on the prohibition of kress, as it is apt to produce jaundice of a green yellow type

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(Ab Z 29a). Among the many hygienic rules to be observed before and after the operation are those to avoid any bodily strain, any journey and sexual indulgence (Gitt 70a). Whoever cohabits after venesection, his blood be on his head, says Rabbi Simon Ben Jochai (Nid 17a). The injurious result from sexual indulgence is stated in the following rather dogmatic way: "If the man cohabits after venesection the children resulting from such indulgence will be cachectic. If both man and wife were phlebotomized before coitus the children will be *Baale Raathan.*" The symptoms of this disease are stated to be as follows: "running eyes, discharge from the nose and excessive salivation. This disease attracts the flies.' Rabbi Jochanan teaches to beware of the flies of the Baale Raathan because they carry contagion. Ami and Assi would not eat anything that came from a street where such cases existed (Keth 77b). Rabbi Joshua Ben Levi did not share this extreme view, and was not afraid to sit with them and teach them the law, relying on the idea that the law of God was a shield against any harm. The nature of this disease is not known to us. The Talmudic teachers looked upon it as a form of leprosy.

Venesection, according to the Talmud, was also performed upon animals for therapeutic purposes (T Bek III). The various regulations described in the procedure of venesection indicates clearly that the Rabbis appreciated the possible serious results that may follow this operation, such as fainting, collapse, coma and death, and were very careful in safeguarding the lives of the people by a carefully worked out system to be followed immediately before and after the operation. One can not but appreciate the effort of the Rabbis to safeguard the lives of those that submitted to this operation. Proper regulations were to be observed while undergoing it for the purpose of preventing disease. They thought that disease was caused by an excessive amount of blood in the human body.

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A Group of Medical Fathers

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GALEN (131-201 A.D.)
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PARACELSUS (1493-1541)
The Father of Chemical Therapeutics

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ANDREAS VESALIUS (1514-64)
The Father of Anatomy

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MEDICO-HISTORICAL NEWS

Every student of medical history will rejoice to hear that a third edition of Dr. Fielding H. Garrison's "History of Medicine" is now in active progress, and will appear shortly.

In one of his letters, Professor Max Neuburger, of Vienna, writes: "The mail from America to Europe travels too slowly. I don't know what's the cause of it, as we are living in peace?" No doubt, many of us are awaiting the day when transatlantic mail will begin to travel with pre-war rapidity.

A feature of the Second International Congress of the History of Medicine, which held its sessions during the early part of this month at Paris, was the museum of historical medical objects, which included medical coins, medals, and plaquettes; early printed and rare books on medicine and surgery; medical autographs; surgical instruments of former centuries; early microscopes; Oriental anatomical drawings; curious specula; old accouchment chairs; odd wooden urinals used for infants; medicine chests of the seventeeth century; Japanese medicine boxes; statuettes of the patron saints of plague; old pharmacy jars, mortars, and drugs.

The third meeting of the International Congress of the History of Medicine will take place next year in London. Is it too early to suggest that the fourth meeting should be in Washington?

At the twenty-fourth annual meeting of the Medical Library Association, which was held last June in Boston, Dr. Edward C. Streeter, the well-known medical historian, exhibited rare medical items from his own library. The permanent headquarters of the Medical Library Association are in the Medical and Chirurgical Faculty Building, 1211 Cathedral Street, Baltimore, Maryland.

Dr. A. Levinson, of Chicago, is to be commended for his studies in Hebrew medicine. His "A Medical Cyclopedist of the Seventeeth Century," "The Pediatric Section of a Medical Cyclopedia of the Seventeenth Century," "Lusitano's Rules for Physicians," and "Erter's Satire on Doctors," have been published in the Bulletin of the Society of Medical History of Chicago.

The Proceedings of the Section of the History of Medicine of the Royal Society, 1920, volume xiii, number 5, contains Clifford Dobell's paper on Leeuwenhoek's discovery of parasitic protozoa during a microscopic examination of his own feces (1681). This may be regarded as the first instance of a microscopic examination of the feces.

Who wrote, in the New York Medical Journal of March 16, that unsigned and unusual review of Patrick Geddes' "The Life and Work of Sir Jagadis Bose: An Indian Pioneer of Science?" It is an old story that many of the best things are anonymous.

At a meeting of the Society of the History of the Natural Sciences and Medicine, Julius Hirschberg, of Berlin, the Nestor of German ophthalmologists, delivered a lecture on the history of the hygiene of the eye.

One of the finest private libraries of medical history we have seen is the collection of Dr. B. I. Hart, of Bridgeport, Conn. Few who pass his cottage are aware of the treasures within.

Dr. Henry Barton Jacobs, of Baltimore, is preparing a bibliography of all the editions of Laennec's book on Auscultation, with reproductions of title pages, etc.

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Medical Life

VOL. 28, No. 8 AUGUST 1921

MEDICAL LIFE

Treatment of Trigeminal Neuralgia
L. Herbert Lanier, M.D.

The Doctor as Witness
L. Winfield Kohn, M.D.

Chronic Posterior Urethritis
A. L. Wolbarst, M.D.

Early Experiments in Pathology
Max Neuburger, M.D.

Cook County Hospital in 1884
Bayard Holmes, M.D.

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(*Established* 1851)

VICTOR ROBINSON, M.D., Editor

VOLUME 28
NUMBER 8

AUGUST, 1921

NUMBER ELEVEN
OF NEW SERIES

Section on Contemporary Medicine

NON-SURGICAL TREATMENT OF TRIGEMINAL NEURALGIA

By L. Herbert Lanier, M.D.

Trigeminal Neuralgia.—Neuralgia is a disease of a sensory nerve characterized by pain in the course of the nerve or in its peripheral distribution.

The trigeminal nerve is distributed over a wide area, and the bony canals through which its several branches pass expose it to injury not alone in the terminal ends of the nerve itself, but there is also the likelihood of fracture, compression, or of maldevelopment of surrounding bone structures. It is in close association with other cranial nerves through which it may become affected. The twenty-two teeth of the deciduous set, and the thirty-two of the permanent, which are supplied by its branches, all have pulps and surrounding pericemental structures which are quite commonly diseased and are therefore frequent sources of irritation. For these reasons, this nerve, as might be expected, is the one most frequently affected by neuralgia. The affection occurs more often in women than in men. It may begin at almost any period of life, but is more frequent in its serious aspects in middle or later life.

Classification.—The types of this affection classified in accordance with its clinical aspects are:

Neuralgia Minor.—This, as its name implies, represents the less severe forms, and may usually be described with the name of the affected branches of the nerve.

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Visceral Referred Pain, Reflex, or Symptomatic Neuralgia.—The irritation, of which the reaction of the nerve system is an expression, may be referred from the teeth, the eye, ear, nose, tongue and other organs associated in the fifth nerve distribution.

Neuralgia Major; Tic Douloureux; Epileptiform Neuralgia.—This is the generic term for a very acute, exacerbating, or intermitting, throbbing pain, which follows the course of a nerve, extends to its ramifications, and seems, therefore, to be seated in the nerve.

The terms symptomatic and idiopathic, as sometimes used in classifications by grouping under the former term the two first types and the third under the latter, appear to be too indefinite and not quite in accordance with recent advances in the study of the pathology of tic douloureux.

Etiology.—The factors which may be concerned in causing the various forms of trigeminal neuralgia are so numerous, their character is so widely different, and their importance in directing methods of treatment so great that division into groups according to pathological similarity is necessary.

The following classification of cause is a modification of one first suggested by William Rose and quoted by Murphy and Neff:

INTRACRANIAL

(a) Cerebral:
   1. Sclerosis.
   2. Aneurysms.
   3. Tumors involving some part of the extent of deep origin of the nerve.

(b) Radical:
   Any inflammatory affection of the sheath of the root.

(c Ganglionic:
   Chronic interstitial inflammatory changes causing compression on the nerve cells.

CRANIAL

1. All morbid processes at the base of the skull and in foramina.
2. Callus following fractures.
3. Syphilitic periostitis.
4. Inconstancy of shape and size of foramina.

EXTRACRANIAL OR PERIPHERAL

1. Dental caries: diseases of the dental pulps, pericemental, and dento-alveolar affections.
2. Contraction of lumina or peripheral bony canals.
3. Exposure to cold or damp, producing perineuritis; atmospheric conditions.
4. Retention of secretion in frontal, maxillary, sphenoidal, or ethmoidal sinuses.

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5. Diseases of the eye, ear and nose; nerves cut in cicatrices, impacted foreign bodies, malposed unerupted teeth, spicule of bone, etc.
6. Traumatism.

Toxic, Reflex and Functional Causes.—Among these are included neurotic temperament, worry and anemia, malaria, digestive disturbances, sepsis, diabetes, la grippe, febrile diseases, rheumatism, gout, pregnancy, hysteria, alcoholism, uterine or ovarian affections, and the influence of any general disease that may predispose by causing a debilitated condition of the system, and also lead, mercury, arsenic, nicotin, and similar poisons. In the great majority of cases the disease process is an ascending one, beginning in the peripheral nerve filaments and later progressing to and involving the ganglion. In a few cases, however, probably including those benefited by an extirpation of the ganglion, the lesion has been central, either in the area of distribution of the sensory root or in the sensory root itself.

Heredity plays no part in the etiology, though in some cases a neurotic history is obtained.

The foregoing may be either predisposing or exciting causes, or both, but it seems best not to attempt any radical distinction of this character in classification such as is given by some authors, because our present knowledge of the varying degrees in which causal influences may be effective does not warrant a distinct line of demarcation.

The Dental Aspect of Trigeminal Neuralgia.—The dental and oral aspect of trigeminal neuralgia is generally conceded to be a matter of great importance. Many vital features, however, are but little appreciated, and there is much confusion in the views or dentists, oral and general surgeons, and practitioners of other divisions of medicine in regard to the importance and character of the effect of local influences in the region of the mouth.

In the description of real or fancied effects from treatment or removal of teeth, dentists have made exaggerated and often unscientific claims and have done much to destroy the confidence, particularly of those who believe in the more or less definite pathological principles which govern all divisions of the body as affected by various forms of disease. On the other hand, only those who are familiar with diseases of the teeth and their treatment could be expected to dignosticate or fully understand dental irritation. As a result the importance of the mouth and the effect of its deformities and diseases is both underestimated and overestimated in its relation to the etiology of trigeminal neuralgia.

Development Factors.—A study of embryonic sections and

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other illustrations clearly demonstrates that arrested development or restricted growth from any cause in the region of the mouth, the most common evidences of which are found in high, narrow palatal vaults, contracted dental arches, and irregular teeth, is chiefly an expression of abnormal developmental tendencies. These defects are usually indicative of neurotic tendency and, therefore, of predisposition to painful as well as other neuroses. Moreover, such restricted growth invariably manifests itself by alterations in the form of surrounding structures. This is noticeably true of the general form and character of the maxillae. Corresponding deviations from the normal are likely to occur in the maxillary and other closely related cavities, foramina, and canals, and the passage of nerves through such abnormal openings subjects them to irritation. Nasal defects, such as narrow nares, deviated septa, spurs, and hypertrophic and other pathological alterations of structure, are similarly frequent evidences of perverted development. Direct opportunity is thus offered for diseased conditions of the nose and associated parts, including the ethmoidal sphenoidal and maxillary sinuses and cells, as well as the orbital and aural regions. Through any of these the nerves may be involved in the disease itself or become affected by actual alteration in size or form. Anomalous communicating openings and channels may also favor pathological states. Many branches of the fifth nerve are thus exposed to disease or to more or less direct irritation. Oral deformity or perverted maxillary development can unquestionably so change the shape of the orbits that the adjustment of its contents to their bony encasement may cause visual defects which may also be etiological factors of no small significance.

Disease of the middle ear through Eustachian infection, the cause and effect of which is well understood, and the pressure of crowded teeth incident to arrested growth of the jaw frequently cause irritation of the nerve.

The reflection of restricted growth in the maxillary region as affecting other bones, gives a reasonable ground for belief that by arrested or perverted development in infancy, important foramina at the base of the skull (notably the foramen ovale and the foramen rotundum, through which the vessels and nerves emerge) may be so restricted in size or altered in form to favor pressure upon the nerve. This occurs when for any reason the accompanying vessels may become distended.

This is worthy of due consideration; for the premonitory

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signs for all the foregoing conditions often appear at an early age and the remedy at this stage is so simple.

Treatment of Various Forms of Neuralgia.—The treatment of trigeminal neuralgia resolves itself into non-surgical and surgical methods. If constitutional diseases are found to be the underlying cause, these must receive proper attention. Every possible source of peripheral irritation must be removed, or the likelihood of its acting as an excitant guarded against. The eyes must be examined not only for visual defects, but for choked disk, partial or complete blindness, or other indication of brain affection, or any disease of the eye or its associated parts which might directly or indirectly be etiological factors. The nose and its secretions, membrane, septal, turbinal, or other deformities, should be examined and corrected if necessary. In like manner, the ear and the frontal, ethmoidal, sphenoidal, and maxillary sinuses should be duly examined, and treatment applied if indicated. The mouth and teeth should be examined and treated if necessary. Habits of life must be duly considered and their correction directed. Ovarian, uterine, or other organic disease should be sought for and treated if necessary; the intestinal tract cleansed and duly regulated; digestive conditions safeguarded; and occupation, if disadvantageous, readjusted to give necessary relief. The general nervous condition must be patiently studied and in so far as possible controlled according to the best psychotherapeutic methods. The observance of thoroughly good hygienic rules must be insisted upon. These include diet, abundance of fresh air, exercise, and massage.

Miscellaneous Drugs and Measures.—Gelsemium. Fifteen drops of the green tincture are to be given every few hours for a few days, or until the physiological limit is reached, which will be noted by the patient beginning to see everything in yellow colors. Hot foot baths and hot applications to the feet tend to draw blood from the head and to cause a general relaxation which is often very helpful. Applications of heat or cold or liniments over the affected region have a grateful effect.

Many of these patients are anemic, and for these ovoferrin for improvement of the hemoglobin or other tonics, and such general restoratives as quinin, cod-liver oil, or the phosphates are beneficial.

Arsenic, potassium iodide, and mercury have their proper places in the list of remedies, especially when syphilis is suspected as a causative influence.

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Electricity, chiefly employed in the form of electrolysis and a high frequency current, has a measure of value, and has been highly recommended. Its possibilities, like those of the X-rays and radium, also well recommended, have yet to be definitely determined.

Hypnotic drugs should only be given as a last resort, and then only with the greatest care in administration, because the tendency of all these patients is ultimately to seek relief of this character, and the danger of the drug habit is always a menace. Bromides, chloral, opium in its various forms, especially codeine and morphine, and other similar remedies are all capable of giving temporary relief; but when once dependence has been placed upon them, the demand becomes more constant and the required doses larger until, with almost unfailing certainty, disaster follows.

Antipyrin, phenacetin, and salicylates have an undoubted place, especially with rheumatic persons. In a general way, however, it may be safely stated that when no relief can be given by measures which without harm in other respects tend to restore normal physiological function in deranged parts, and to upbuild general health and resistance or to correct nervous states, or when no actual peripheral cause can be discovered through correction of which relief may be given, then, instead of relying upon drugs, the only rational treatment must be in the nature of injections into the nerve at accessible points in the course of the affected branches, or operations upon the nerve or the Gasserian ganglion.

The Injection of Osmic Acid Directly into the Nerve.—A 1.5 per cent. solution has been advocated by Bennet, Murphy, Hammerschleig, and others, with reports of cases benefited. Its effectiveness depends upon two factors—the destruction of nerve filaments and their substitution by connective tissue.

Favorable results from the use of osmic acid in nine patients are reported by R. Hammerschleig. A 1 per cent. aqueous solution was injected into the infra-orbital and mental foramina. In eight of the patients the pain has not recurred for intervals varying from four months to as many years; in the last case there was great improvement.

Murphy claims that the osmic acid gives a longer period of relief on the average than does any method except removal of the ganglion or the metallic plugging of the foramina. He reports a number of his cases as well after the lapse of four years.

As long as a feeling of numbness which gives a measure of discomfort is felt in the region supplied by the injected branch of the nerve in cases where the trouble is confined to the division

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so treated, there is relief from pain. When, however, the patients report that the face feels quite natural again, pain quickly returns, as a rule.

Injections of Alcohol.—Alcohol by deep injection into the nerve trunk was first performed by Schlosser, of Munich. The method of performing has been improved by Ostwald, Levi, Baudouin, and Patrick. From 70 per cent. to 90 per cent. alcohol is used with a little cocain or stovain to prevent pain or discomfort from the injection.

Cocain hydrochlorate.....Grains, one
Chloroform .....Minims, ten
Alcohol .....Drachms, three
Distilled water, sufficient to make....Ounces, one-half

Of this he injects 2 c. c. For succeeding injections the proportion for alcohol is increased gradually up to 90 per cent., the amount of cocain being also increased.

The instrument is a needle of large calibre, about 12 cm. long, marked off in centimeters up to 5, beginning at the point. This is fitted with a stylet of such length that when pushed home the end is flush with the point of the needle. For the injection a syringe holding 2 c.c. is employed, the nozzle of which will fit snugly into the end of the needle.

For the inferior maxillary branch of the fifth nerve the needle is inserted at the lower border of the zygoma, 2.5 cm. in front of the anterior border of the external auditory meatus. The bony ridge of the temporal bone, as well as the descending root of the zygoma, can always be felt along the front border of the meatus. The stylet is partly withdrawn, the point of the needle pushed through the skin and subcutaneous tissue, and the stylet is then pushed home, so that for the remainder of the penetration the blunt end of the stylet serves instead of the sharp point of the needle. This is to prevent the possible transfixion of blood vessels. The needle is then pushed inward in a plane at right angles to the side of the face and inclined a little backward to the depth of 4 cm. At that depth the point should reach the inferior branch of the fifth nerve as it emerges from the foramen ovale. The stylet is then withdrawn, the syringe fitted to the needle, and the injection slowly made.

For the superior maxillary division of the fifth, the point of entrance is at the lower border of the zygoma, 0.5 cm. posterior to the point which would be reached by prolonging downward the line of the posterior border of the perpendicular process of the malar bone. From this point the needle is passed almost per-

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pendicularly inward, being inclined forward and upward. At a depth of 5 cm. the point should reach the nerve at its emergence from the fora mnerotundum into the sphenomaxillary fossa.

The author modifies Patrick's procedure by injecting novocain with a small syringe at exactly the point and in the direction to be followed by the large caliber needle and stylet. This is done by injecting a little novocain just under the skin, and from time to time, as the point of the needle penetrates. By carrying the needle in, almost but not quite, to the point to be reached by the alcohol injection, the insertion of the large syringe is rendered much less painful. Care must be taken, however, not to penetrate deeply enough to anesthetize the branch of the nerve to be injected. Even though the point of entrance, the direction, and the depth of the injection may be ever so carefully calculated, slight anatomical differences in individuals renders it necessary that the sharp pain must be felt when the syringe point reaches the foramen ovale or the foramen rotundum. The radiation of pain throughout the area of distribution of the injected nerve gives certain indication that the objective point has been reached.

The Hartel method of injecting the Gasserian ganglion is the one now more generally adopted. The left index finger is placed between the jaw and cheek with the patient's mouth closed. The space between the coronoid process of the mandible and the maxillary tubercle is located. The cannula is introduced into the cheek at a point opposite the second molar. With the finger inside the mouth as a guide, the cannula is forced subcutaneously between the mandible and the maxillary tubercle, directly upward until the hard, smooth surface of the sphenoid bone isfelt .

Hartel calls particular attention to the necessity for proper alignment of the cannula at this point in the procedure, so that a line drawn vertically upward from the point of entrance of the needle into the skin will bisect the pupil of the eye when looked at from the front, but if looked at from the side it will bisect the articular eminence of the zygoma. The cannula is now pushed backward and slightly upward until the guard on the cannula which has been fixed at 6 cm. indicates that this depth has been reached. Slight movement of the point of the cannula over the surface of the bone gives indication, when the resistance is no longer felt, that the point has penetrated into the skull through the foramen ovale.

Approximately 2 c.c. of 80 per cent. alcohol is injected into the ganglion, a few drops at a time. Dorrance advocates moving the point of the syringe from side to side in order to come in contact with as much of the ganglion as possible.

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The after-treatment consists in covering the point of the puncture of the skin surface with collodion dressing. The eyes need protection and care following the alcohol injection of the Gasserian ganglion, the same as after the ganglion operation. They should be flushed with boric acid solution and protected with watch-glass crystals, suitably arranged with cotton or felt rings. Close observation and care of the eyes should be given for eight to ten days after the injection. The chief danger appears to be loss of vision of the eye on the affected side.

But there is also danger of a puncture of the internal maxillary artery, of injection into the Eustachian tube, of coming in contact with a rough bone surface and therefore being below the foramen. Complications of the oculomotor nerve, facial nerve, and the soft palate, herpes facialis, keratitis, corneal ulcer, and paralysis of the sixth nerve have been reported by Hartel and others.

A few deaths from ulcer have been compiled, and in most of these cases there appears to have been some other complication. There seems to be freedom from these objctions with improved technic, and it is not unlikely that this may, in the course of time, entirely supplant more serious operative features for the relief of tic douloureux.

The reports of the result of this treatment vary considerably, and but few authors claim that trigeminal neuralgia can be permanently cured in this way. All, however, are agreed that a measure of relief can be given. This may last from a few days to months, or even a year or more. Schlosser reports 123 cases with cessation of pain during the average period of ten and two-tenths months. Brissoud, Cicard, and Tannon report 18 cases, with an average relief from three to five months. Patrick urges in its favor that the operation is practically devoid of danger, requires no anesthetic, that relief can be given in many cases for a year or more, with but little inconvenience to the patient.

My observation of many patients who have come under my care after having previously had alcohol and osmic acid injections, according to the old methods of peripheral treatment, are not favorable. In almost all of these cases the period of relief was hardly sufficient to compensate for the discomfort following the injection, and in some of them even repeated injections had failed to give the desired relief. More modern technic in the deep alcoholic injections of the superior maxillary division at the foramen rotundum, and the inferior maxillary division at the foramen ovale, have been so satisfactory in their results as to make many

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of the peripheral operations, performed quite frequently in the past, quite unnecessary.

There is a considerable difference in individual cases in the results of these injections. Occasionally the severe immediate pain is quickly followed by numbness along the line of the distribution of the nerve, and relief from pain. Sometimes this disappears quickly, sensation and, ultimately, pain returning. In other cases there seems to be a hard battle between the nerve tissues and the alcohol, and more or less pain continues for some time, after which there may be a long period of relief. Occasionally it is necessary to make a reinjection in a short time, and even then the desired relief may come very slowly. But the difficulties of injection are so slight when compared with any kind of operation, and the suffering of these patients is so great, that this feature of the treatment is comparatively inconsiderable when the more or less continuous torture is considered. The necessity for repeating the injection is, after all, not a serious matter. The continued injection of alcohol in the close vicinity, or in actual contact with the nerve, must almost surely cause degenerative changes which will give ultimte relief of sufficiently enduring character.

Surgical methods of treatment in neuralgia, neurectomy, nerve stretching, are all interesting, but operations for exposure of the first Trigeminal branch (Ophthalmic Nerve), and operation upon the Second or Infra-orbital division of the Fifth, and operations on Third or Inferior Maxillary division of the Fifth as well as operations for removal of the Gasserian ganglion, all deserve to be discussed.

Nevertheless, the ease and safety of alcoholic injections still warrant the employment of this treatment before the more radical Gasserian operations are resorted to. It is even possible that alcoholic injections of the Gasserian ganglion may be found to be entirely sufficient.

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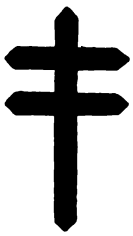

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THE DOCTOR AS WITNESS

By L. Winfield Kohn, M.D.

In the New York Evening Post of July 2nd, 1921, there appeared an article written by Prof. Zechariah Chaffee, Jr., of the Harvard Law School, entitled "The Doctor as Witness," and this communication concerned itself particularly with the confidences imposed in physicians by their patients. The question of whether such confidences should be held strictly secret or whether they should be disclosed when an apparently reasonable demand arises was the main topic under consideration. In France it is said that the disclosure of confidences is regarded as a crime. The fact was brought out in this article that certain states such as Massachusetts and New Jersey did not tolerate the idea of physicians remaining silent on the witness stand whereas other states, of which New York State is typical, adopt a half-way attitude towards the obligation of secrecy. Now, which of these policies is correct? Are the people of France different from us in this country, and do they for that reason require such profound secrecy? Is there a different type of wisdom in Massachusetts and New Jersey than there is in New York and other states? Can this problem be satisfactorily settled?

The general policy of the law, says Prof. Chaffee is to obtain as many facts as possible about a controversy on trial, but this policy is cut into at many points by what are called rules of evidence. Here it is that heresay evidence and testimony that is likely to be considered untrustworthy is eliminated by the court. The evidence of the physician which should be free from these objections would, therefore, have considerable value in a court room were it not for the fact that some other very important factor stood in the way. This factor is the question of confidential relation between physician and patient. The patient may contend that whatever testimony the doctor may render was acquired through the great degree of confidence imposed by him in the physician and that such confidence should be kept both sacred and secret. For practically similar reasons, a wife need not testify against her husband and vice versa, also a lawyer is not allowed to testify for or against his client without his client's consent. What is the idea of all this secrecy? Is society in readiness to dispense with this secrecy or does she still expect that the confidential relations between man and wife, lawyer and client, and physician and patient be preserved? That is, after all, the great fundamental question! Prof. Chaffee may be correct in

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intimating that too much silence is practiced by the physician in the court room and the lawyers may be perfectly right in contending that the doctor's non-professional information should be submitted as evidence, but, after all, we must not forget that the layman (client or patient) also has a right to expect proper and considerate treatment. It seems almost impossible to separate the non-professional from the doctor's professional knowledge. The reason for this is the fact that the mind has so much to do with the cause and cure of disease that almost all information that a patient conveys to the doctor may be considered professional. Then, again, we must not lose sight of the fact that we are yet far from that state of development of intellect that warrants an exposition of matters of a private nature. The world is hardly broad enough mentally to be able to place a true and proper estimate upon such matters, the nature of which is liable to unduly affect their emotional character.

Another point that must be made clear before proceeding further, is that of the physician being considered as privileged. That is the impression Prof. Chaffee conveys when he speaks of the physician being extended the privilege of keeping silent. It can hardly be considered, although there probably are times when a doctor who was fortunate enough to have escaped the witness stand, may feel that undue privilege had been accorded him. If a right or franchise, which is really the proper meaning of the term privilege, has been granted to anyone, it is certainly not the doctor, but rather the patient, to whom it has been granted.

Now, how shall we proceed to view this question of the doctor's silence on the witness stand and the confidences that repose in him? The honest philosopher will always contend that the only way is the "honest way." Wish that we were all "honest philosophers!" Unfortunately such is not the case, but a great many of us, nevertheless, agree that honesty is the best policy and that the truth is always desired, no matter how much it hurts. One of the realities of life is the fact that we have honest and dishonest people, honorable as well as shyster lawyers, and last, but not least, decent and well informed as well as indecent and ill-informed physicians. These are facts that we dare not overlook. An honorable lawyer will probably always seek and advocate the truth and make use of it in solving the many problems that come before him, but how about the dishonorable lawyer, if there are any; will he make proper use of the truth? Shall we proceed to force doctors upon the witness stand to divulge the secrecies of life in their true light and prob-

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ably do their patients irremediable harm? Shall we doctors give those lawyers the truth, who seem to have the extraordinary faculty of distorting facts in such a manner, as to aid them in attaining a personal unjust triumph rather than making proper honorable use of them? Have we a right to view this question from the standpoint of the lawyer or doctor? Does it not seem more obliging and proper on our part to view the question from the standpoint of the ordinary individual? After all, do not the ordinary people constitute the majority? Is it not our moral duty to give them our first consideration and to act in a capacity that will make for their general welfare?

It must be admitted that if we approach the problem from this angle, a solution of the difficulties that often confront lawyers who have cases which involve the testimony of physicians, is not obtained. The reason for this is the fact that the physician has probably become the greatest confidant in the community, and in order to command the respect and regard of his fellow patients, he must prove himself absolutely trustworthy. The moment a patient consults a physician for some medical condition, just that moment does the physician assume one of life's greatest responsibilities, and in order that he may always be considered worthy of such trust, it devolves upon him to prove in every action that this confidence has not been misplaced.

The community at large, I believe, has as much to do with the attitude of a physician toward them as any other factor. It probably is the fundamental factor. The physician will be allowed as much freedom of expression as the community will tolerate, and no more. The moment he traverses the boundary line he becomes an object of attack, and no physician feels that he can act in such a capacity and at the same time command the respect of the public.

All persons, by virtue of natural instinct, look first to a preservation of their personal welfare, and in order to assume themselves of the best, call to support every influence that they feel will bring about the result aimed at. Whatever money or its equivalent may do for them they cherish and whatever factors may injure them they shun. They seek medical advice for the good it may reflect and not for harm; therefore, the doctor must always do the best for them and under no circumstance must he allow an exposure of such privacy as would injure them.

All of us who have any sense of regard for ourselves and for our fellow beings seek a thorough acquaintanceship with the standards of morality and ethics that the world has arranged for

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us, and we make an effort to live up to these standards as well as we possibly can. At any rate, it is the effort on the part of most of us to give the world the impression that the standards are being respected. We should know, at least, that we are all judged by our actions. Those of us who have made a study of life will probably know more of the activities of human beings than others who have no such knowledge, and we who are thus informed see good reason for withholding affairs of a personal or private nature from the world. The public should be most thoroughly made acquainted with the fact that humanity is not only endowed with virility, but with frailty also. The world boasts of its virility and regards it as noble, but shrinks from the thought of its weaknesses, which it regards as vile. Not until mentality has developed to a much higher plane than it is at present and not until all of us have a better and more adequate appreciation of the nature of humanity will secrecy regarding anything in life be done away with. When once that stage of civilization is attained, the world will insist upon the truth and will detest secrecy, but while conditions are as they now are, we are forced to respond in a manner that the conditions will countenance and the medical profession is included within the scope of this natural response.

Prof. Chaffee implies that some doctors divulge every last detail of confidential information in club room gossip and in thickly veiled items of a medical journal. I do not believe that doctors are resorting to the practice of disclosing matters of a private nature at any time. Unless the identity of the individual is directly disclosed or very definitely implied through a relating of circumstances connected with the case, the information must be considered to have lost its privacy. A great deal of good can be done for the public at large through the transmission of what may originally have been private confidential information, in such a manner as will not implicate the individual regarding whom the affair first arose and through such a source as will not tend to divulge the identity of the person directly concerned. By disclosing information in such a mannenr, it may be said that no news of a private nature has been revealed. The manner of communication has deprived the news of its personal or private character. The physician, however, who disregards and imparts information of a private or personal nature at any time is guilty of gross injustice to humankind and should be deprived of the privilege to practice medicine. I hope that whenever doctors undertake to communicate information to the public that it

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may have been stripped of everything having a personal or private character. When medical journals remove from their news items everything that may identify the patient, they have done away with the last details and no cause for alarm should further arise. I believe that all of our medical journals strive to do away with anything that may tend to invade the personal or private rights of an individual.

As for cases that come to court, I do not believe that the time has yet arrived for doctors to be called to divulge secrets in the lives of individuals. Only in such instances, where high crimes have been committed, such as murder, highway robbery or such offenses as gravely endanger the welfare of the community, should the physician testify, and he should do so not because of a court order but because his duty to the community demands it. There may be instances, where the general health of the community is endangered, as in the case cited by Professor Chaffee, of the doctor in Nebraska who, after notifying the patient in a hotel that he was afflicted with a contagious disease, urged him to leave the hotel the next day so that others within the hostelry might not be exposed to the same infection. Instead, the patient remained at the hotel and the doctor felt it his duty to notify the hotel management, who thereupon forced the patient to leave. As a consequence, the doctor was sued. The court, however, decided in favor of the doctor, contending that in view of the great danger to life resulting from silence, he had a moral obligation to speak. The community from which this doctor hails should feel mighty proud of him. Whatever laws the Board of Health of a community establishes are naturally created to protect the inhabitants of that neighborhood from disease and whatever diseases require reporting ought to be attended to by the physicians. The Board of Health will give either as much notoriety or as much silence to the case as it may warrant. I may suggest that in the event of cases appearing before the court, of a nature that does not permit of general dissemination of knowledge regarding them and where the court feels that the information that the physician holds be communicated to it, this information should be kept strictly within the confines of the court. I have in mind a case of that kind—a young lady who was married to an individual afflicted with a dreaded disease, but who was ignorant of this fact and found it out too late. She then asked for an annulment of her marriage, and only upon the testimony of the physician who had treated her husband could she obtain it, but even there the physician had to obtain permission

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from the husband before he could speak. In this particular instance the husband offered no objection to her demand, but should he have done so it is readily appreciated how unjust would have been her treatment and unnecessarily cruel her suffering. Only in such extraordinary cases would it seem that the physician be forced to testify in court. In other instances where a human life or the public welfare is not so intensely concerned, the doctor ought not be forced to testify. We must, after all, have a high regard for human life and a wholesome respect for humanity, and for that reason, should we withhold unnecessary disclosure of private and personal affairs. We must, for a while, continue to depend upon the intelligent understanding of the men comprising the jury, and hope that they may happen to be students of human nature and that their decisions may be just and correct.

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THE MODERN TREATMENT OF GASTRO-INTESTINAL DISEASES

IV.—The Treatment of Gastric and Duodenal Ulcer

By John L. Kantor, M.D.

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There is no separate treatment of gastric as opposed to duodenal ulcer. In fact, the treatment of both conditions can hardly be considered very satisfactory for no less a reason than that the etiology and real nature of the disease are quite unknown at present. It is therefore impossible to present either a thoroughgoing prophylaxis or a specific line of treatment. Furthermore, the positive diagnosis of ulcer is often difficult to make and in everyday experience many patients are put on ulcer cures, and quite properly, merely to "take no chances." In such cases, however, the treatment does not even possess the virtue of a therapeutic test because the result still leaves us in doubt as to whether an ulcer was or was not present. Finally, the course and symptoms of ulcer vary within wide limits. It is therefore obvious that no single rigid line of treatment should be expected to apply to all cases. In short, the treatment of ulcer is largely a purely empiric procedure.

Prophylaxis.—Despite the fact, as already stated, that a prophylaxis in any real sense is wanting, several points in this connection may well bear emphasis and repetition. The general

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rules for the prophylaxis of digestive diseases as laid down at the beginning of this series of articles, if practiced, as suggested, from early childhood, can undoubtedly be relied upon to minimize the incidence of gastric and duodenal ulcer. Furthermore, all actual digestive disorders should always be investigated and competently treated at the earliest moment. This attention should not be deferred, as often happens because the disability is partial or intermittent, until repeated recurrences or an unusual duration of symptoms drive the sufferer to seek professional attention. In this connection it is well to remember that any lesion of the digestive tract other than ulcer, such as appendicitis, gall bladder disease, chronic constipation and the associated cathartic habit may by some reflex spastic, hypersecretory, or ischemic mechanism favor the development of gastro-duodenal ulceration. The theory that bacterial infection plays a primary rôle in ulcer formation, though again lately urged in some quarters cannot be accepted as proven. Of course, the removal of infected foci anywhere in the body, inasmuch as these might serve to impair the general health of the individual, would naturally be expected to diminish the chance of ulcer formation should a tendency in that direction be present. There is no question whatever that a tendency to the production of ulcer presents a very real diathesis in certain individuals and even in whole families. Such subjects should not only exert especial care in their personal prophylaxis, but should always keep themselves under medical observation so as to avoid as much as possible the recurrence of disabling symptoms.

The condition of the teeth is of considerable practical importance outside of any theoretical consideration of the dangers of "focal" infection. Pyorrhea, dental caries, and missing teeth mean a deficient mechanical subdivision of food in the mouth and thus impose an unfair extra burden on the stomach and the rest of the digestive apparatus. Serious as such a disability is in the "preulcer" stage, it becomes, if anything, still more of a handicap during the course of active treatment when every conceivable effort is made to spare the stomach and duodenum.

The question of body habitus, too, should receive attention. Those individuals who enjoy a sthenic build and the accompanying ability to eat almost any food at any time and in any quantity that may suit their fancy may find that even their capacity can be strained or exceeded. Such persons should be cautioned earnestly against committing excesses in eating, drinking and smoking, and should be taught to recognize the first signs of discomfort as a

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strict warning to return to the rules of regular living and moderation. The details of treatment applicable in such cases have already been outlined in the section on the treatment of "gastric irritation." Not only should the diet be bland and unstimulating, but the total bulk should be reduced in considerable proportion.

Asthenics, on the other hand, by virtue of their malnutrition, their general irritability, their occasional anemia and their rather frequent vagotonia, are also likely to develop ulceration. The preventative measures applicable to these subjects have already been considered in detail in the section dealing with the treatment of ptosis and the asthenic state. Such measures include particularly general bodily rest, careful feeding with concentrated nutritious diet, and support of the lower abdomen.

ACTIVE TREATMENT: *General Considerations.*—The objects of active treatment are first to promote in every way possible the conditions favorable to healing of the ulcer, and secondly to overcome the disturbed physiology caused by the disease and thus to control the symptoms complained of by the patient. The various empiric measures that have been devised to carry out these plans vary considerably in the principles made use of. For example, some authorities favor a preliminary period of starvation, whereas others recommend feeding from the beginning. Likewise, the diet, according to some, should be predominately carbohydrate in character, while others insist on foods rich in proteins. Still another plan of treatment calls for the complete shortcircuiting of gastric and upper duodenal digestion by feeding through a tube opening deep in the duodenum. In some cases, also, ambulatory treatment may be the plan decided upon. Finally, in those cases failing to respond to medical care, the question of surgical relief must be considered.

At first blush, perhaps, the therapeutic field may indeed look a bit confusing. Once the underlying principles of treatment are understood, however, the choice of methods is rendered much simpler. In a disease that shows such a wide variation in course and symptomatology as that under discussion, it is obvious that no single method of therapy can be expected to be equally serviceable in all cases. Some patients will do better on one plan of treatment, others on another. It is therefore not a competition between methods, but a selection of the best available method for the particular case that is the problem that confronts the physician. Here, as elsewhere, then, the individualization of cases is the keynote of good therapy.

Bed-Rest.—The first object of ulcer therapy, namely, the in-

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stitution of conditions that favor healing of the lesion, can naturally be best accomplished by putting the affected part at rest. Inasmuch as both bodily and mental activity are believed to stimulate gastric peristalsis it is customary to order the patient to give up all work and undergo a bed-rest cure. There is no question that bed rest is strictly indicated after hemorrhage wherever the symptoms are at all alarming, and wherever the trouble has persisted or recurred despite less thoroughgoing treatment. In all other cases it is, to say the least, the method of choice and should always be offered as such to the patient. There are some individuals, however, who for different reasons either cannot or will not go to bed. This is particularly often true in the case of clinic patients who are the family bread winners and to whom a period of non-employment from any cause represents such a tragic sentence that they are willing to accept almost any risk in order to escape it. Other patients there are who, though they suffer indeed from ulcer, present such mild and easily controlled symptoms that bed rest appears to them an unnecessary hardship. In both these cases ambulatory treatment may be attempted and the results of clinic experience occasionally justify its employment. The details of this form of treatment will be presented in a subsequent section.

Preliminary Starvation.—Assuming then that the patient is to undergo a bed rest cure, the question that next demands an answer is—Shall the treatment be initiated by a period of preliminary starvation? There can be no doubt that hemorrhage (hematemesis) is an indication for at least a short period of food abstinence. In well-nourished, sthenic individuals, also, a preliminary starvation is not only well-borne, but may be highly beneficial. In the asthenic and chronically undernourished, however, a deprivation of sustenance is not so clearly indicated and may indeed prolong the period of recuperation.

The object of food deprivation is to aid the healing process in a two-fold manner. In the first place the activities of the stomach, both secretory and motor, are reduced to a minimum. In the second place, the stomach, being empty, is allowed to contract down to its smallest possible dimensions. The period during which starvation is continued extends from two or three days to a week or more, depending on the time required for the disappearance of symptoms and the general condition of the patient.

During the period of food abstinence the care of the mouth is of the greatest importance. The objects secured by proper attention in this direction include the prevention of bad taste, coated tongue, and possible parotid infection; and the control of thirst, as

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well. A very worth-while practice is to have the patient chew paraffin wax at stated intervals throughout the day. The wax should be of the proper consistency. The commercial "Parowax" has been found quite satisfactory. The use of mouth washes and of the toothbrush should not be neglected. Small pieces of cracked ice may be sucked from time to time where thirst is a prominent symptom.

Rectal Feeding.—If the period of fasting is at all prolonged, or the patient is exsanguinated or much undernourished, the introduction of fluids by rectum is indicated. By far the simplest and best way is the use of the Murphy drip. This can supply fluid at the rate of one-half pint an hour (one drop per second) or even faster. Plain saline solution or decinormal sodium bicarbonate or ten to twenty per cent. glucose may be given in this manner. The last two solutions tend to overcome acidosis; the glucose adds nutriment as well. The fluid may be introduced as in post-operative cases, "two hours on and two hours off" during the day.

The old method of trying to maintain nutrition by the introduction of ordinary foodstuffs per rectum by means of "nutritive enemata" has been shown to be fallacious. Only amino-acids, simple sugars, and alcohol can be absorbed from the lower intestine. If it is deemed necessary to supply nourishment in this manner, throughly pancreatinized (not peptonized) milk should be used for the purpose. The milk should first be skimmed because the fat is not absorbed and may cause irritation; the pancreatinization reduces the proteins to amino-acids; the sugars and salts are unchanged. Or else the clysma suggested by Smithies may be employed:

℞

Alcohol 50%	30.0
Glucose	30.0
Normal salt solution q. s. ad	240.0

Nutritive enemas should be administered at body temperature by the drop method with the patient on his back and the hips elevated. A bulk of ten ounces (300 c.c.) should not be exceeded. A little opium (ten minims of the tincture) may be added to the first few feedings in case irritation is present. The rectal tip need not be inserted further than just beyond the anal sphincter. The enema may be given twice daily.

External Applications.—The use of external applications to the abdomen is common to practically all methods of treatment. Except in the case of hemorrhage, where cold is universally recommended (see section on treatment of hemorrhage), hot moist ap-

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plications are made with the idea of promoting healing of the ulcer, preventing painful spasms of the stomach, and restoring normal gastric function in general. The distress and atypical pains due to gastric adhesions are also relieved by this procedure.

Perhaps the best latter-day method of securing the benefit of heat is by means of the electric pad. A piece of moist flannel should be placed under the pad and the whole covered by an abdominal binder. The temperature should be maintained at a point as high as it can be borne and the flannel is to be changed whenever it becomes dry. If an electric pad is not available the original procedure as recommended by v. Leube may be resorted to, i. e., compresses wrung out of water as hot as it can be borne are applied and renewed at frequent intervals, every half hour, or even every fifteen minutes.

A less efficacious though far less troublesome method than that just mentioned is the Priessnitz compress. This consists of a piece of flannel wrung out of warm water and covered by a large towel. Over all goes the abdominal binder. This application is changed from two to four times by day and once during the night.

Smithies recommends constant applications of Ochsner's solution (alcohol-boracic acid) as an aid in overcoming gastric spasms.

Medicinal Treatment.—Medicines do not play much of a rôle in ulcer therapy. The chief reliance is placed on careful feeding according to one or other of the dietary regimens about to be described. The old faith in the specific healing action of such drugs as silver nitrate, or in the efficacy of the protecting coating of the salts of bismuth has been considerably shaken.

Of medicinal measures those which tend to control gastric acidity are nowadays in greatest favor. The use of alkalies is very widespread. And this, despite such apparently sound theoretical objections to their routine administration as that in many cases neither hyperacidity nor hypersecretion is present, and that it is possible that alkalinizing the stomach may delay or prevent healing of the ulcer. Amongst the many antacids, Carlsbad salts have enjoyed a long reputation. If the natural water is unavailable the artificial salts (sodium sulphate 50; sodium bicarbonate 6; sodium chloride 3) may be substituted. The dose is a teaspoonful in 8 ounces (a large tumberful) of hot or warm water. The salts are usually taken on a fasting stomach. Where constipation is marked the dose may be increased or repeated.

An alkaline water such as Celestins Vichy is also commonly

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prescribed. It may be given alternately with, and in amounts equal to, the feedings from the beginning of treatment.

The Bourget method of using alkalis is also in favor. It consists of sipping a dilute solution of salts during a period of one-half to two hours after meals, depending on the amount of food taken. The original formula is:

℞

Sodium bicarbonate	1.0
Sodium phosphate	0.3
Sodium sulphate	0.2

Sig. Dissolve in ½ glass of water.

Satisfactory results may also be obtained from the use of the alkaline powder recommended for the control of "gastric irritation" (hyperacidity), composed of six parts of sodium bicarbonate and one part of heavy calcined magnesia. From one-quarter to one-half a teaspoonful or more may be given in one dose or in divided doses after each feeding.

The administration of alkalies also forms an integral part of the Sippy treatment about to be described.

Where vagotonic symptoms form a prominent part of the clinical picture the exhibition of atropine or belladonna may be of value. As mentioned in a previous section, it is always a good plan to increase the dose of this drug gradually to physiological limits. For general restlessness or insomnia the bromides, cediene, or the somnifacients may be administered. In the treatment of simple ulcer morphine is not indicated.

Diet: *General Principles*.—The mainstay in ulcer therapy is the dietetic management. Different plans of feeding have been elaborated by different workers. However, all methods in which feeding is carried on by mouth (duodenal alimentation will receive special consideration) possess certain general principles in common. Perhaps first and foremost is the principle of feeding only small quantities at a time. In this way are continued, though necessarily less thoroughly, the benefits derived from complete food abstinence; i.e., each individual gastric cycle is reduced to the smallest possible effort, and the stomach is kept in a state of relative contraction.

The second principle in feeding is the maintenance of the state of nutrition. Every effort is made to reduce the danger of malnutrition to a minimum. During the first week or so the loss of a few pounds is inevitable since the total amount of food given is insufficient to maintain body weight. From the second week on, however, a drive is begun to reach the patient's normal weight (should he be undernourished) and, as Lockwood has put

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it, it then becomes a question of great nicety how far the diet can be carried without detriment to the patient's ultimate chances of recovery.

The third basic principle of every feeding plan is that the diet be bland, non-irritating and non-stimulating. It is here, however, that we meet with considerable difference of opinion as to just how this should be carried out. Indeed, it may be said that two, almost diametrically opposed, schools of procedure have arisen. According to one plan, originated by v. Leube, the best foods for the end in view are the carbohydrates, preferably in liquid form, the idea being that these require the minimum gastric digestion and likewise impose the minimum of work upon the duodenum. The other plan of treatment was devised by Lenhartz (and forms a basic part of the present popular Sippy diet). According to this plan, a concentrated protein food such as milk is fed at frequent intervals for the reason that it combines quickly and thoroughly with the hydrochloric acid and prevents the corrosion which is considered to be largely responsible for the continuance of ulceration.

In the following pages, for the sake of simplicity, these two diets will be called, respectively, the "Carbohydrate Diet" and the "Protein Diet."

(To be continued)

THE MODERN TREATMENT OF VENEREAL DISEASES

VI—Chronic Posterior Urethritis.

By Abr. L. Wolbarst, M.D.,

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In any consideration of the chronic infections of the posterior urethra and its adnexa, it is essential to remember that the inflammation generally involves all the organs composing this tract—that is, the verumontanum, the prostate, the seminal vesicles, and the posterior urethral floor, walls and roof. Even the vesical sphincter is not immune to invasion. It is extremely difficult to draw a fine line between these respective organs, since they all seem to be affected to a greater or less degree. In some cases one particular organ, the prostate, for instance, shows the most marked evidence of the disease; in other cases, the seminal vesicles; and in still others, the verumontanum alone seems to have borne the brunt of the inflammatory process.

It is a safe rule to work on, however, to say that the entire

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genito-urinary tract probably is infected; and it is the duty of the skilful medical attendant to determine to what extent each of the respective components of the tract is involved, and to adjust his therapeutics accordingly.

Colliculitis—Inflammation of the Verumontanum.—Until this little organ, situated on the floor of the deep urethra, became demonstrable to the naked eye through the perfection of the modern posterior urethroscope, comparatively little was known about it. Within the past decade, however, we have learned that many of the functional and organic disturbances following an attack of gonorrheal urethritis are due largely if not altogether to chronic inflammatory involvement of this organ.

As a result of our recent observations on this little structure, we have been compelled to change our entire conception of the pathology and therapeutics of the posterior urethra in chronic conditions. Deep instillations and massage of the prostate are exceedingly effective in certain types of cases, but when the verumontanum or colliculus is involved they are of little or no value. Nothing but direct local applications to the organ made through the posterior urethroscope can be of any appreciable value in the treatment of this condition. Its frequency is greatly underestimated, consequently there are innumerable cases of chronic posterior urethritis that go on for years even under treatment, without any appreciable benefit, solely because the inflammation in the verumontanum has not been discovered and the proper treatment instituted.

These articles being limited to the subject of treatment, the matter of diagnosis and differential diagnosis need merely be mentioned to say that the verumontanum and the floor and walls of the deep urethra adjacent to it, all give evidence of considerable injury in chronic gonorrheal affections, and the treatment should be adjusted to the pathologic condition made evident by urethroscopy. Symptoms may be sexual, urinary or sensory in character, but the treatment of all these conditions practically does not vary.

Usually the treatment consists in making local applications of silver nitrate solution, 10%, on a cotton carrier, to the affected parts through the urethroscope. Frequently, however, cysts and other formations will be found on or near the verumontanum, which must be treated according to their character. Cysts are best treated by puncture, followed by silver nitrate applications, which have the effect of clearing away the debris remaining after the walls have been punctured.

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Papillomata of the urethra or verumontanum respond very nicely to fulguration, applied in the same manner as in the case of vesical tumors. Adhesions and cicatrices, which are frequently found after gonorrheal infections, respond after some time to the silver nitrate applications. Usually, however, they are exceedingly obstinate and rebellious to treatment. Persistence usually is rewarded by a decided improvement in the pathologic appearance and the symptoms complained of by the patient.

Catheterization of the ejaculatory ducts is a refinement of therapeutics which is of considerable value in certain types of cases involving the deep urethra. In these cases the patient generally presents evidences of so-called "sexual neurasthenia" with particular involvement of the seminal vesicles. The ejaculatory duct orifices are seen much inflamed, congested and sometimes choked up with inflammatory debris, and the catheterization of these ducts, if skilfully performed, will bring about a decided improvement in the pathologic condition.

A word as to the urethroscope in posterior urethritis. The straight direct vision instrument never should be used for the deep urethra; it causes too much trauma. None of the direct vision instruments, with the possible exception of Luy's urethroscope, has met with such universal approval as would recommend it for the general practitioner, however.

The Buerger cysto-urethroscope has marked a distinct advance in the examination of the posterior urethra. This instrument consists of a sheath somewhat similar to that used in certain irrigating cystoscopes, provided with an aperture on the lower or convex aspect. In this instrument the principle of indirect vision of the Nitze cystoscope is applied to the urethra, so that a rght-angled view of a field lying parallel with the axis of the shaft is obtained. The lamp and lenses are so situated that the source of light and the window of the instrument are approximately at the same point, giving as nearly perfect optical conditions as possible. The sheath, closed by the obturator, is introduced into the bladder, the urine evacuated, and the bladder irrigated if it contains turbid urine. The telescope is then inserted.

An irrigating bag containing boric acid or oxycyanide solution is connected with the instrument through one of the lateral irrigating cocks in the sheath, so that the parts can be viewed while the urethra is being distended, in the manner suggested by Goldschmidt. All the parts of the urinary tract, from the orifices of the ureters down to the bulbous urethra, can be brought directly

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into view by moving the instrument, withdrawing it gradually and rotating it. It is astonishing to find the large number of intractable cases that owe their existence to chronic inflammation of the verumontanum and adjacent parts. The instrument also can be employed for the anterior urethra, the curved beak being replaced by a short blunt tip.

Chronic Prostatitis.—By far the most frequent complication in chronic posterior gonorrhea, this condition may with a certain degree of justice be termed chronic gonorrhea itself, for there are very few chronic cases that do not give evidence of more or less prostatic involvement.

For the superficial type of chronic inflammation the potassium permanganate or weak silver nitrate irrigations previously referred to will be found of the highest value, especially when gonococci are present. However, an anterior injection of one of the mild silver salts will often control an active posterior urethritis, even more quickly and satisfactorily than the irrigations. As has been previously described, the urethra may be filled with the solution, which is then massaged gently down into the deeper portions of the canal. When the urine shows considerable pus, the irrigations preferably should be used. As soon, however, as the urine clears up, and shreds take the place of pus, we resort to the use of instillations. They are to be used carefully and gently, as they are capable of doing much harm otherwise. The deep urethral syringe (Keyes-Ultzmann) is used, the curved shaft made of silver, attached to a small syringe, which holds about 30 minims.

The tip of the instrument is inserted into the membranous urethra, and the solution slowly and gently injected. After filling the posterior canal, the fluid gravitates backward into the bladder and may be retained or voided by the patient. It is well that the bladder be emptied previous to an instillation, so as to get the full benefit of the solution on the vesical neck.

The most useful and commonly employed solution for instillation purposes is the nitrate of silver, in from one-half to two per cent. solution. Soon after the instillation there is a smarting and burning in the deep urethra, associated with an imperative desire to empty the bladder. This sense of burning and discomfort may last several hours, during which time the patient has a continual desire to urinate, associated very often wth reflex movements of the bowels. The instillation is given every two or three days, and the strength gradually may be increased, but never stronger than two per cent.

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If the pain after an instillation is inordinately great—and this happens often in men who cannot stand pain or discomfort—immediate relief can be obtained by an intra-vesical irrigation of normal saline solution.

Of late years there has been a strong tendency to substitute for silver nitrate some of the new silver salts, especially protargol; this preparation is employed in strengths varying from 2 to 10 per cent., and even up to 40 per cent. It is less irritant than silver nitrate, and often is equally effective. This preparation has enjoyed a wide and deserved popularity as a substitute for silver nitrate in chronic urethral inflammations. Argyrol is not so effective, in my experience, in chronic urethritis as in the acute stages. It is employed in from 10 to 50 per cent. strength, and has the questionable advantage of being practically non-irritating.

Copper sulfate is sometimes used, beginning with a 1:500 solution and gradually working up to 1:50 or even stronger, It is especially serviceable in the mild cases, those in which gonococci have disappeared.

Sulfate of thallin is extremely effective at times. This may be used in instillation of a 2 per cent. solution, gradually increased to 12 or 15 per cent., and is particularly useful where the patient is sensitive and hyperesthetic. In mild cases it acts exceedingly well, and it is found advantageous in preparing the urethra for the silver nitrate solution.

These irrigations and instillations are curative when used alone only in those cases of deep urethral inflammation in which the prostate and the seminal vesicles are not seriously affected. In every case these organs are more or less seriously involved in the inflammatory process, and unless careful attention is given to their treatment, all our efforts are doomed to failure. We always should remember the anatomic structure of the prostate, and the pathologic conditions following an invasion of the organ by the gonococci. Three cardinal methods of treatment are at our disposal, and the judicious use of them means a cure.

The first is the use of vaccines, which already has been referred to. These never should be omitted in any well-marked case of chronic prostatitis.

The second indication is to massage the prostate and its adnexa; the third is to use rectal irrigations, and thus apply heat or cold, as the indications may warrant, to these organs. In the practice of massage, the greatest care must be taken not to exert too much force in the manipulation, for otherwise it is likely that

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an acute inflammation of the prostate or an acute epididymitis may result. I believe this is accounted for by the bruising of the parts, caused by excessive physical energy, resulting in a re-awakening of latent gonococci in the prostatic glands.

The manipulation should not be done in a mechanical fashion.

The patient first should pass a little urine, leaving some in the bladder for expulsion after the massage. The prostatic secretion should be examined microscopically each time massage is performed; we are thus made acquainted with the condition of the organ as regards the presence of pus and gonococci. As the patient leans over on a chair seat, he holds a clean slide under the penis, and in this way catches the massaged secretion as it emerges from the urethra. This is submitted to microscopic examination after staining.

The covered finger having been lubricated and inserted *gently* into the rectum, we first map out the prostate and vesicles, and then slowly and carefully apply pressure, first to the prostate and later to the vesicles, if the latter can be reached. The forearm of the massaging hand should be in line with the axis of the patient's body, and the surgeon should throw the weight of his body against his elbow.

The object of the procedure is to empty the glands and follicles of their pathologic detritus, and by stimulating circulation in the organ restore it to its normal condition. When, therefore, the finger sweeps around and across the surface of the organ, it takes notice of variations in size, shape and consistency; and we apply the pressure to such points in particular as are especially soft or hard, to swellings, infiltrations, nodules and painful areas.

The manipulation should be kept up for about one minute, the amount and character depending on the condition of the prostate and the sensitiveness of the patient. The secretion having been gathered on a clean slide and carefully spread out and thinned, preparatory to microscopic examination, the patient now voids his urine, and this is followed by an intravesical irrigation of any of the usual irrigating solutions. If the presence of gonococci in the secretion is suspected, silver nitrate is to be preferred. Otherwise any bland fluid of a non-irritating character will do, the object being to cleanse the urethra and bladder.

Massage should be performed two or three times a week, in the early stages, later reducing the frequency to once a week. It is always well to alternate the massage with the silver nitrate instillations.

In certain cases characterized by "neurasthenic" phenomena

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the frequent practice of massage, acting on the already weakened mental endowment of the patient, produces an effect which, I am convinced, constitutes a distinct pathologic entity and can be termed the "massage habit." Like cocain and opium which first relieve pain and then enslave their victims, this frequent massage of the prostate and vesicles affects its victims in the same manner. In the clinics patronized by these neurotics it is not unusual for them to beg the surgeon for a "massage," in very much the same manner as a drug habitué would beg for his drug. The neurotic comes to the clinic to get his massage, even though it may be undesirable for him to have it.

A vicious circle is thus formed, because the temporary relief is followed by a sense of irritation in the prostatic region caused by the frequently repeated trauma perpetrated under the name of massage.

Massage admittedly is a most invaluable factor in the treatment of prostatic and vesicular factor in the treatment of prostatic and vesicular inflammation, but like everything else it should be used in moderation.

Second in importance to massage and instillation is the rectal douche. This is administered daily or several times daily, by the Kept, Chetwood or the author's pattern of rectal tube. Either hot or cold water may be used, the choice being determined by the patient's tolerance. The cold douche seems to be more effective in "neurasthenic" cases. The psychrophore serves the same purpose as the recurrent tube. The indiscriminate use of sounds in chronic gonorrhea has been productive of considerable harm. The same may be said to a certain degree of dilatations by the Oberländer and Kollmann instruments. Their use as a routine measure, in the absence of definite indications, cannot be justified in view of the extensive lacerations which they are apt to produce and the opportunity they thus afford for reinfection.

Stricture—Posterior Urethra.—In the presence of a stricture or infiltration areas in the deep urethra, sounds and dilators are indispensable, but they must be used with great care lest they do more damage than good. These instruments should only be employed with antiseptic precautions, and followed by an antiseptic irrigation of the urethra and bladder.

External Urethrotomy—Perineal Section.—This operation is indicated in those cases of stricture in the deep urethra which are resistant to dilatation or too tight to admit a sound. It has the great advantage of holding any possible hemorrhage under direct control, and gives opportunity for excellent drainage, thus

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reducing by far the likelihood of septic infection. It is also the operation *par excellence* for prostatic abscess, urinary extravasation and allied conditions involving the perineal region.

The preparation of the patient is the same as for any surgical operation. For a few days previously it is well to give urotropin or salol. Either general or local anesthesia may be employed; the former is preferable, however. For the latter a 1 per cent. solution of alypin or novocain may be used, infiltrating the perineal region freely.

The amount of difficulty encountered in doing the operation depends on whether or not a guide, or at least a filiform, can be passed down to the bladder. With this guide in position the operation is comparatively simple.

It is not necessary to go into the details of the operation. They can be found in any of the surgical textbooks, described at great length, which present limited space prohibits.

The after-treatment is very important. Some surgeons permit a urethral catheter to remain *in situ* for several days. Better results will, however, follow if, instead of the catheter *á demeure,* a large-sized perineal tube is used. This will be found much safer from every point of view, and more pleasant for the patient. The bladder is washed out freely through this large tube at the close of the operation with hot sterile water or boric solution. If there is much hemorrhage it may be controlled by irrigating with hot adrenalin solution, 1:10,000, or 1:5,000 silver nitrate solution. Packing the perineal wound around the drainage tube also will be found effective, particularly if the gauze carries with it a liberal amount of glutol. A T-bandage holds the dressing in place and contributes a fair amount of pressure.

Particular pains must be taken to see that the bladder is being drained properly. The perineal tube is connected with a long narrow rubber tube, which leads into a bottle or urinal. The latter may be kept clean by placing in it a quantity of 2 per cent. solution of phenol. Irrigation of the bladder should be done twice daily. Boric or weak silver nitrate solution (1-10,000) should be used for the purpose—the latter preferably if cystitis is present. After the drainage tube is removed, the wound is kept surgically clean and a dry dressing applied. Simultaneously a large-sized sound is introduced into the bladder every three days, until the wound is healed. The urine is passed through the perineal wound for the first few days, but after a week or ten days the wound shows signs of healing and the patient passes urine voluntarily, partly through the perineal opening and partly

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through the urethra. Within a week thereafter the urine is passed normally, except when a perineal fistula forms.

Chronic Vesiculitis.—As has already been stated, it is important to bear in mind that the prostate and seminal vesicles are closely related, anatomically, physiologically and pathologically. It is not always possible to differentiate between them. Nevertheless in cases in which the seminal vesicles are involved most seriously it is not an infrequent observation that the general practitioner has overlooked them entirely and devoted his attention exclusively to the treatment of the unoffending prostate. This treatment usually consists of frequent massage and the internal administration of santal oil.

The diagnosis of seminal vesiculitis is made by physical examination of the organs themselves, combined with the symptom complex presented by the patient. They are usually large, swollen and tender, when felt by the rectum. Usually they hang high in the lower bowel and only their lower tip can be felt. Occasionally they are extremely large and matted together with the prostate, so that they cannot be distinguished apart from each other.

The treatment of seminal vesiculitis has undergone a radical change within the past few years. Merely stripping or massaging the vesicles will rarely bring about a cure, because the sacs are not emptied of their accumulated secretions by this procedure, even if they can be reached by the finger.

Today the proper treatment of chronic vesiculitis has became a purely surgical procedure. The day of santal oil and Lafayette mixture for "chronic gonorrhea" has passed. Urologists may differ as to the best means of attacking these infected sacs, but all agree that the treatment has but one object in view, namely, to get rid of the toxic purulent products which fill them. To this end various surgical procedures have been devised, each method having distinct merit in certain types of cases.

Belfield brought the subject within the realm of practical surgery by his operation of vasotomy, by means of which he injected medication into the infected vesicles via the vasa deferentia. This was followed by vesiculotomy (drainage) and vesiculectomy (excision), both of which procedures have been perfected recently.

Undoubtedly there are cases that require nothing less than drainage or absolute excision, but it probably is the consensus of opinion today that these cases are the exception and not the rule. In the hands of many urologists, including myself, vasotomy

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and its modifications have given most satisfactory results. In my experience, covering approximately one hundred cases, this operation has proved of inestimable value, and I am convinced it is the ideal method of treatment for the average case. The most striking results have been observed, in my experience, in cases belonging to the "neurasthenic" and arthritic groups. In unusually severe cases, in which vasotomy has failed, drainage or excision through the perineal route is indicated.

Vasotomy can be performed as an office procedure, but it is best done in a hospital or in the patient's home, where he can rest in bed for a day or two. Moving about immediately after the operation is apt to be followed by an epididymoorchitis.

A brief description of the operation may not be amiss: Each day for several days before operation the prostate and vesicles are vigorously massaged and the bladder irrigated, in order to empty the vesicles as much as possible. Under local anasthesia, the vas deferens is exposed through a short incision in the scrotum, near the external ring. After carefully stripping its many fine coverings, a solution of one of the silver salts is injected into the vas by means of a syringe and a blunt pointed needle of fine caliber. Usually five c. c. of argyrol, collargol or protargol solution are injected. Collargol seems to produce less irritation in the lumen of the vas. Unless there is an obstruction in the vas or the ejaculatory ducts, the solution thus injected can be recovered almost immediately through a catheter inserted in the bladder, thus demonstrating that the fluid has passed through the vesicles and the ejaculatory ducts into the posterior urethra and bladder. The vas is then dropped back into the scrotal sac, the skin and fascia closed with a chromic suture and a dry dressing applied, held in place by a suitable suspensory bandage. The entire procedure, if properly performed, is absolutely painless; my personal preference for the anesthetic is a ½% solution of novocain, used freely.

For several days, sometimes for some weeks, the urine voided by the patient will be stained black or brown by the retained argyrol or collargol solution; in some instances a seminal emission ten or twelve days after the operation likewise will be brown or black in color.

The results following the operation will be improved materially if the ejaculatory ducts are catheterized at least once before operation. It is my invariable custom to catheterize them whenever it is possible.

After the operation, it will be found advantageous to admin-

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ister vaccines in order to combat the general toxemia which generally is associated with chronic vesiculitis. It is my experience that a faithful adherence to this method of therapy generally will bring about the desired results in the vast majority of cases.

Chronic Epididymitis.—This condition, the remains of an acute infection of the epididymis, usually requires no special treatment; as a rule the patient is not aware of any inconvenience or pain as a result of the old inflammation. There is a more or less distinct nodular thickening of either end of the organ, or of the entire organ itself, which is generally painless and calls for no particular attention.

There are cases, however, which give the patient considerable annoyance. The so-called "neuralgia of the testis" is largely responsible for this class of case. The patient suffers considerable pain in the affected epididymis, either at times or all the time, and is generally miserable in consequence. No treatment that we know of seems to be of any avail, and the only measure that is at all productive of any satisfactory result is complete excision of the offending epididymis. While this seems to be a radical measure at first sight, it is obvious on further consideration that the patient usually has nothing to lose through this procedure. The chronic thickening of the epididymis as a result of the previous inflammation has already produced sterility on that particular side of the genital tract in all probability, and the patient is no worse off in this respect if his "neuralgic" epididymis is taken from him. On the other hand, the offending symptoms generally disappear coincidentlly with the disappearance of the epididymis.

Another type of case which is productive of much annoyance is that in which recurrent attacks of acute inflammation take place. Occasionally, for no perceptible reason, the acute inflammation which originally appeared as a complication of the acute gonorrheal infection returns to plague the victim, from time to time. Each new attack of gonorrhea is apt to be signalized by the reappearance of this inflammation. In these cases, too, excision has proved to be the only efficient method of treatment.

Occasionally one hears of almost miraculous cures of these epididymal indurations by massage and various electrical treatments, but in the observation of most surgeons these measures usually have no value whatever, except as a temporary sedative to the hypersensitve nerves of the patient

The importance of these chronic thickenings should not be underestimated, because they are apt to become tuberculous. It is

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therefore evident that excision in troublesome cases not only relieves the patient's complaint, but may possibly prevent the later development of tuberculosis in the organ.

Gonorrheal Arthritis.—John Hunter stated that he knew "one gentleman who never had a gonorrhea, but that he was immediately seized universally with rheumatic pains, and this happened several times." Whether or not this particular gentleman actually suffered from gonorrheal arthritis, the fact remains that gonorrhea and arthritis frequently are associated in the rôle of cause and effect.

The treatment of this condition is still in the experimental stage, to a very great degree. We have no specific remedy or treatment for gonorrheal arthritis, though the success of sera and vaccines and certain operative measures leads to the hope that this long hoped for specific may be not far distant. Medicinal treatment is entirely symptomatic and expectant. The usual antirheumatic remedies, such as the salicylates and aspirin, have little if any effect on this condition. Neither have the many other drugs that have been suggested.

Arthritis is a local manifestation of the general gonococcal infection, and therefore it is our duty to combat the general infection as a primary indication. The arthritis cannot be cured so long as the gonococcal toxin is active in the blood stream. Treatment may be divided into three distinct phases, local treatment, applied to the affected parts, constitutional treatment, by means of sera and vaccines, and local treatment applied to the original gonococcal focus, wherever it may be located.

Without going into any extended discussion of the merits of sera and vaccines, we shall confine ourselves to the statement that the mixed polyvalent gonococcal vaccines have given the greatest satisfaction in joint involvement of gonorrheal origin. Mulford's and Lederle's preparations have given excellent results, almost to the point of being considered specifics.

There can be no doubt but that these vaccines exert a distinctly beneficial effect on the toxin which is circulating in the patient's system. At times their action is almost magical in rapidity in the relief of pain and swelling. The dosage and frequency of administration should depend on the individual case and according to the resulting reaction. Beginning with 30 to 50 million bacteria per injection, the dosage may be run up rather abruptly to as high as 200 and even 500 millions, depending on the reaction obtained. In the average case 300 millions are sufficient to bring about an excellent response.

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Next in importance is the treatment of the gonorrheal infection itself. Wherever its location may be, it should be isolated and uncovered and treated until every vestige of the disease has been eliminated. All the resources at our command in the treatment of this chronic condition must be resorted to. These include the local treatment of the anterior and posterior urethra, the verumontanum, prostate and seminal vesicles—especially the last. I believe the seminal vesicles are involved seriously and act as a focal point in every case of gonorrheal arthritis. The surgical measures already referred to under the treatment of seminal vesiculitis, should be adopted not as a last resort, but as one of the first and most important measures to combat the infection; for it should be remembered that the arthritis is the result of a localization of the toxic products emanating from an infected focus—usually the seminal vesicles.

In my personal experience, vasotomy has been a most successful procedure in cleaning up these foci in the seminal vesicles, and I believe the results are as good as, if not better than, the more serious operations which drain or excise the vesicles. These operations should be done only in cases which show pus distension which cannot be emptied by stripping or massage. In any case vasotomy should be tried first.

Locally, for the joint itself, everything that the humand mind can think of, has been recommended. Rest, massage, heat and cold, light rays, active and passive motion, electricity, counter-irritation, cauterization, injections into the joint, drainage of the joint, all of these and many others too numerous to mention have been recommended, and it must be admitted they all have some value in some particular case. The principal thing to bear in mind, however, is that we are dealing with a local manifestation of a general systemic invasion, and that the surest way to bring about a cure with the least amount of joint injury is to get rid of the original focus of infection.

It may be added that joint involvement with its resulting ankylosis is a comparatively rare occurrence nowadays, owing to the improved technic in the treatment of the original gonococcus infection, combined with a greater realization of the benefits to be derived from an early and persistent employment of the vaccines and the surgical treatment of the seminal vesicles.

798 Lexington Ave., New York.

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HAIL, HYGEIA!

Dithyrambic Sanitation for the Readers of Medical Life.

By George E. Devyr

He never, oh! he never, broke the health laws whatsoever,
He bathed, breathed deeply and inhaled the open air,
Observed the laws of diet, lived a life of calm and quiet,
Avoided all rich dishes, and partook of simple fare.
The Demon Rum he hated, said its joys were over-rated.
He never chewed tobacco or smoked a cigarette.
His clothes were cool or warm, suiting sunshine or the storm,
And his footgear so constructed that his feet were never wet.
No joy rides caught his fancy—no siren's necromancy
Had ever coaxed or lured him from the straight and narrow road.
He eschewed all late hour joys, never went out with the boys,
And in no way was a patron of pleasure's dizzy code.
His life was ruled by reason, he did nothing out of season,
And stuck closer to the doctor's word than man was ever found.
But in yonder vale he sleepeth, where the waving willow weepeth,
And all of him that's mortal lies six feet under ground.
And he———
Well, he sure is a devil whose life is one long revel,
He cares not for hygienic or any other rules.
Cigars he smokes in bunches, drinks rum and whisky punches,
And considers prohibitionists as just so many fools.
He abhors all ventilation, swallows without mastication,
And cares not what his clothing is in sunshine or in rain.
He loves to play the ponies, plays late at night with cronies
Either pinochle or poker, for pastime or for gain.
He goes out on dizzy whirls, with gay and giddy girls,
And the glitter of the gaslight pleases more than sunshine's ray.
He loves to see the places and loves to face the faces
That one may meet at eventide on pleasure's primrose way.
No doctor's scheme he ever tries, no druggist's pills he ever buys,
Nor ever takes vacation as he gaily goes his rounds.
But his voice rings loud with laughter, rings at night and next morn after,
His cheeks are like red roses and he weighs two hundred pounds.

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SECTION ON

HISTORICAL MEDICINE

An acquaintance with the history of his science is, however, especially indispensable to the practical physician, if he would thoroughly comprehend and penetrate the secrets of his profession. To him, indeed, it is the bright and polar star, since undoubtedly it alone can teach him the principles of a medical practice independent of the currents, the faith and the superstition of the present. Moreover, it offers him as scientific gain, through the knowledge of the past, the measure for a just and well-founded criticism of the doings of his own time, places in his hand the thread by which he unites past conditions and efforts with those of the present, and sets before him the mirror in which he may observe and compare the past and present, in order to draw therefrom well-grounded conclusions for the future.

J. H. Baas.

1921 AUGUST 20 Pages

EARLY EXPERIMENTS IN PATHOLOGY

By Max Neuburger, M.D.

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The use of animal experiments in the service of pathology reaches much further back than is usually thought to be the case. It may even be said that since the second half of the seventeenth century it was tried in order to answer a whole series of questions concernning pathology. For example, the origin of hydrops, inflammation, and regeneration, the cause of paralysis, convulsions, numbness, as well as a number of toxicologic experiments. Not only before our time was there experimental investigation in pathology, but a gradual development thereof can be shown for centuries past. We will give some illustrations of what has been done, from the enormous material at our disposal.

In the field of general pathology the question of how fever arises incited investigators to animal experiments at a very early date, particularly at the time when chemical systems dominated, the seventeenth century, and almost all pathological processes were traced to acids, alkalis, etc. According to the doctrine of Sylvius, fevers are caused partly by acidulous, and partly by alkaline degeneration of the humors. It therefore seemed natural

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that both adherents and opponents considered the best weapon for defense or contradiction, as the case might be, the introduction of acids or alkalies into the blood channel, and interpreted the subsequent phenomena in their own way.

The direct injections of substances into the blood track, especially into the veins, the intravenous injection, usually called *chirurgica infusoria,* was employed both experimentally and even therapeutically ever since the discovery of the blood circulation. The main representatives in this direction were, among others, Lower, Charleton, Elsholtz, Purmann, Wepfer, Harder, Peyer, Brunner, Baglivi, and Malpighi.

One of the first who made all sorts of infusion experiments in order to contradict chemical theories was Alfonso Borelli. Without essentially denying humoral anomalies, he nevertheless contradicted the justification of the then prevailing doctrine, namely, that all fevers were caused by acids or even decomposition in the blood. He points, particularly, to animal experiments by his friends Buonfiglioli and Fracassati, who injected two drachms of sulphuric oil into the vena jugularis of a dog without being able to observe fever. The Florentine, Pinelli, sought to reject the assumption of the origin of fever because of acid in the blood, by an animal experiment, in which a dog, after the injection of one scruple of vinegar into the vena jugularis died after half an hour. Pasta similarly observed rapidly resulting coagulation of the blood after infusion of acids.

The experimental work of Adam Seybert, an American, took place at the close of the eighteenth century; it was his aim to do away completely with the decomposition theories. In his inaugural dissertation, an attempt to disprove the doctrine of the putrefaction of the blood, etc., (Philadelphia, 1793), he reports a number of infusion experiments, consisting in injecting, for instance, putrefying serum, pus, or blood, into the blood-vessels (vena cruralis, vena jugularis, arteria cruralis) of dogs. At the autopsy, 12 or 13 hours after death, he found the blood was quite without the characteristics of putrefaction, and in particular, without odor of decay, in all these cases. On the other hand, he observed that the animals reacted very actively shortly after the injection of a small quantity of the putrefying substance, by evidence of pain, convulsions, weakness, and irregularity in the action of the heart, followed, very soon after, by death.

On the basis of these experiments, Seybert believed himself justified in saying that "the blood cannot ferment in the living body."

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The experimental injections of putrefied substance into the blood track were continued in the first decades of the nineteenth century by a few French investigators, including Gaspard and Dupuy. Dupuy found that the exhibited symptoms were analogous to those of typhoid fever.

Other noteworthy experiments were those occasionally made with fresh animal secretions and excretions. For instance, Courten (Philosophical Transactions, 1712) observed the effect after injecting urine or a solution of uric salt in water, large quantities of which produced convulsions. At the beginning of the nineteenth century, experiments were also made by Prevost, Dumas and Segalas.

Of the numerous toxicologic infusion experiments, we will here mention only the infusion of mercury, in so far as it was made to investigate the effect of this poison on the lungs. As some investigators were believed to have experienced that after the internal use of mercury consumption often appeared, they tried to gain exact knowledge by animal experiments.

The Irish physician, Allen Moulin (Philosophical Transactions, 1691, 1694) reported, for instance, about such an experiment. One and a half ounces of mercury were injected into the jugularis or cruralis of a dog, and the appearance of febrile conditions was observed, combined with severe dyspnea, and at the autopsy the outer surface of the lung was found to be covered with blisters the size of a pea, almost all of which contained small pellets with a little pus. One hundred years later, Thomas Beddoes, in his treatise, "On Pulmonary Consumption," reported quite similar findings. He states that at the autopsy of the animals experimented upon, nodules showed in the lungs which appeared to be purulent, and contained a small mercury pellet in the center of the circumscribed inflammation. Such experiments were used as a basis for the theory according to which tubercles do not have a specific nature, but are to be simply regarded as inflammatory products.

The animal experiments of Cruveilhier and Gaspard (1826) were based on the same principle. Cruveilhier injected a quantity of mercury into the air passages of dogs, or into the veins, and at the autopsy saw a great number of miliary areas which showed a purulent or cheese-like constitution, and contained a mercury pellet in their center. From this it was concluded that every circumscribed purulent inflammation which has a persistent cause, brings about the formation of a tubercle.

It was finally Villemin's examinations which placed the

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specific nature of tuberculosis beyond doubt. However, it deserves mention that before Cruveilhier, Hebreard (1805) and, later, Lapelletier, tried the experimental conveyance of scrofulous sores on the exposed cutis, into the blood track or stomach of dogs, or guinea-pigs, but the result was negative.

Besides tuberculosis, it was at an early date considered possible to discover the origin of other infectious diseases by animal experiments. As regards the plague, for instance, Deidier, professor at the university of Montpellier, during the terrible epidemic raging in Provence from 1720 to 1722, tried to justify his opinion that the affection was based on a pathological constitution of the gall, by animal experiments. He put gall from dead bodies of the plague stricken into the wounds of dogs or he injected a mixture of such gall with lukewarm water into the jugularis. The dogs became apathetic, somnolent, and mostly died after three days, bubos having formed in the inguinal and axillary region, as also gangrenous inflammation in the bowels.

From the rather large number of experiments to trace the origin of syphilis, and to perform the experimental conveyance to animals, we shall only mention that John Hunter and William Turnbull performed in vain the inoculation with venereal pus. On the other hand, the Viennese surgeon, Zeller, was more successful; he found his suspicion confirmed that syphilis is caused by polyandry. He confined five healthy rabbits male and female, in one cage, and after six weeks, found all affected specifically (1810).

Alibert (1766-1837) was the first who tried to clear up the pathogenesis of cancer by performing vaccination experiments with cancerous ichor, on animals, experiments which were continued about the middle of the century by B. v. Langenbeck and Klencke with an improved method by means of injections with freshly pressed out cancerous juice.

The important chapter of pathology on the injurious effect of outer forces also finds much experimental treatment in olden times. In this chapter, for instance, belong animal experiments on inanition, withdrawal of atmospheric air, influence of high or low temperature, and of electricity, on the bite of poisonous animals, and death from suffocation, drowning, or hanging. The literature on this subject is already very conspicuous at the close of the eighteenth century.

John Hunter (1728-93) must be designated as a real master of experimental pathology. His celebrated work, "A Treatise on the Blood, Inflammation and Gunshot Wounds," still consti-

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tutes a mine of excellent observations. The book contains, first of all, numerous carefully described experiments on inflammation. Among others, the following problems are discussed: coagulation of the blood (significance of the living vascular wall, chemical influences, etc.); participation of the vessels, and change of the blood in inflammations; artificial production of pus, and its caustic action; influence of the access of outer air on the inflammatory process; disposition of the various tissues for the inflammation; temperature in artificially produced inflammation, by means of injecting a solution of common salt into the abdominal cavity.

There is further found in this book experiments on the elasticity of the arteries, influence of the air on the color of the blood; discoloration of stagnating blood; freezing and thawing of body parts; heart action during artificial breathing; change of the blood color under the influence of artificial respiration; fall of temperature after the intravenous injection of tartarus emeticus; consequences of the extirpation of an ovary; growth and development, etc.

Hunter's description of animal experiments made for the purpose of studying wound healing and transplantation is particularly interesting. He successfully transplanted the spur of cocks to their combs, or the testicles into the abdominal cavity of other cocks or hens. Connected therewith were, finally, experiments on regeneration or renewed growing together of several vessels and tendons.

Let it here be mentioned in passing that the question of the regeneration of nerve substance, after injury, was made the subject of numerous experiments by the Gottingen professor Arnemann (1763-1807). He found that wounds of the nerves, and of the spinal cord, close by means of a nodular firm, reddish substance, or by a cellular tissue, while losses of substance in the brain were filled by a substance very similar to that of the brain, but softer and more yellowish.

In conclusion, we must mention an investigator who fully grasped the value for pathology of the animal experiment, the apostle of the new trend in medicine, Bichat (1771-1802). It was he who made numerous and extremely careful experiments on the processes in the various forms of death, (Researches physiologiques sur la vie et la mort, Paris, 1800) and was the first to sharply distinguish the mutual relations and dependent conditions on each other of heart, lungs, and brain. He estab-

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lished the groundwork for all further reasearch by his analysis in all details of the influence of the "death," i. e., the ceasing to function, of heart, lungs, or brain, on the other organs.

MEDICAL EDUCATION IN CHICAGO IN 1882 AND AFTER

By Bayard Holmes, B.S., M.D.

Professor of Surgery, College of Physicians and Surgeons, Chicago, 1895-15. Secretary, Association of American Medical Colleges, 1894-1902. Secretary, Chicago Medical Library Association, 1891-3.

IV—The Cook County Hospital in 1884-5.

During my second autumn in the medical school a notice of the coming intercollegiate competition for the Spencer-Bulloch Prize was posted in all the medical, dental and pharmacal schools and in the Northwestern University at Evanston and in the old Chicago University at 34th and Cottage Grove Avenue. The examination was set for the coming February (1885) and was to cover "optics of the compound microscope" and "microscopical technique." There was a theoretical and a practical examination. Although I already possessed a splendid binocular of Bulloch make, with a wonderful mechanical stage graduated for accurate measurement of angles and a complete polarizing equipment, I desired to get this prize; which was a new low single compact microscope and Abbe condenser, with lenses designed for histologic use. Spencer, of Geneva, N. Y., joined with Bullock in offering this prize annually to encourage microscopic study in the schools of Chicago. This was a reasonable advertisement at a time where there was no practical histologic or bacteriologic laboratory instruction in any medical school in Chicago, when the only microstome was a razor, a cork and a carbon dioxide tube, or what was much better, a bath of ice and salt.

The lectures and the clinics at the college and the hospital were not as time consuming in 1884-5 as the time card of the present day medical student suggests, and there were no quiz classes for hospital examinations. There was, therefore, plenty of time for optics, microscope construction and microscopic technique. My acquaintance with Mr. W. T. Keener, the original and one might almost say only Chicago medical book-seller, who was then on Washington Street near Dearborn, secured me a corner in his book shop to read and discover what books I ought to buy for protracted and serious study. At that time there was a splendidly clear text book in the International Science Series which I settled

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upon and bought. It taxed my mathematics in places, but it was just the book for a lone student of optics. Not long ago an old notebook turned up, in which I had deliberately asked myself, as I finished each chapter, several hundred questions such as I thought my examiners might propound, and some time later I had filled in rapidly in pencil my answers, using only the dividers and drawing instruments allowed at the examination. I also catechised myself in much the same manner on Lee's Vade Mecum, the first thin edition of which had just come out.

This was the first, and has remained the only "plugging" that I ever undertook for an examination, and as it happened I won the prize and still possess it, and though it has long since outlived its usefulness and outlived, moreover, any satisfaction that I took in the achievement, the examination made me two lifelong friends, and the discovery of a friend has ever been the most precious and valued achievement of my life.

The examination was held in Mr. Bullock's own little flat above a store on Halsted Street, near Adams, and the papers were written about his dining table. It was an anxious and silent affair, lasting the whole evening, about three hours. The questions were printed and there was a fair latitude for selection, as was reasonable with pharmacy, medicine, biology and chemistry represented by the contestants. Near me was Weller Van Hook, a student from the College of Physicians and Surgeons, whom I next met as an interne at the Cook County Hospital and with whom my intellectual and spiritual life has ever since been shared in a most intimate and sympathetic manner. He has been an inspiration and a guide as we passed together through the dark wood of scientific medical practice and research, where the straight path was often confused by antagonistic pseudo-scientific public opinion among our colleagues.

I wish that I had the ability to make the medical students of to-day appreciate the obscurity of our medical horizon in the 1880's. Obstetrics was clinically and mechanically a science, but the practice of obstetrics was made pathological by the meddlesome midwifery of the medical men of the time. Two years later Dr. Charles Warrington Earle discovered the practice of antiseptic midwifery in Milan, Italy, and came home to find it had been practiced at the County Hospital for several years past. Childbed fever was still a terror. The best results were attained in the cottages of the city by the uneducated midwives, who did nothing but wait. They had no childbed fever, though occasionally a mother died of eclampsia or of placenta prævia.

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Typhoid was the maximal medical ailment of the period the cause of which was just discovered but not yet attested. Wound diseases were badly combatted, and rarely successfully excluded. Tuberculosis was etiologically a solved problem, but clinically it was still in obscurity and early diagnosis was hardly thought of. In the early days of our practice Dr. Weller Van Hook and I often got together for our mid-day meal in the center of the city to discuss our latest experiments or our disappointments, our hopes or our fears. These lunches were the best sort of a post graduate course, and they continued to be for years, until our increasing obligations led us into habits and ways of life that broke up the custom.

The microscopic prize examination was ended in a terrible February blizzard. We started home after ten o'clock with no street car in Chicago running. It is hard, the hot summer's day of this writing, to recall more than the high drifts of snow and the narrow plowed way between the rails where we walked side by side. The sidewalks were impassible. Several of us started out toward the County Hospital, near which we lived. Beside me was Henry D. Galloway, from the School of Pharmacy, in which school he was afterward for years Professor of Chemistry, now a surgeon at Roswell, New Mexico. His alertness and intellectual intensity arrested my attention, and his originality of outlook entranced me. The wind was from the West and opposed our progress. He was often short of breath as a habit rather than because of this opposition, but intensely earnest and incisive in his statements, letting me suddenly into the depths of his thoughts. As we discussed the examination we discovered our mutual interests and our many mutual experiences as well as the vast differences in our outlook and our philosophies of life. He was a real chemist, while my chemistry was always theoretical. He was suspicious of human character and motive, while I was an optimist and an easy apologist. He was disciplined, business like, and arithmetically trained, while I was idealistic and algebraic, qualitative rather than quantitative. We were both strong, self-conscious, country bred and untactful, frank to a fault and never thought to put the best foot forward or "offer the least resistance" as discretion might dictate. He was a good fighter and a good loser, and congratulated me on winning the microscope before we knew the result, just from my description of the answers I gave those questions. We got home shortly, but talked a long time on a stormy corner, thinking we might never see each other again.

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But fate decreed otherwise, and our association became more intimate. When the time came that I was in a position to initiate a full course of laboratory instruction in the College of Physicians and Surgeons (now the medical school of the University of Illinois) his experience at the Chicago College of Pharmacy and this acquaintance with laboratory equipment placed him in charge of the laboratory supplies and made the success and permanence of large laboratories in medical schools possible and economical. But this is another story.

Somewhat later in the year, and just before the graduating exercises, came the examinations for internes in the Cook County Hospital. These examinations were held in the hospital amphitheatre for internes on the Regular Side and in the staff rooom for internes on the Homeopathic Side. As I had been unable to switch over from the Homeopathic School into either Rush or the P. & S., it was necessary for me to take the latter examination.

Webster, Bliem and I got places and my standing gave me preference. It is probable that my familiarity with the hospital ways through work in the laboratory helped me in this examination. It was largely oral, and only one short set of ten questions was written. Dr. Henry Kippax conducted the examination in medicine and therapeutics, and Dr. Charles Adams conducted the examinations in pathology and surgery. Dr. Adams was ever the best operator, the best teacher, and by all odds the most scholarly medical man I ever knew. He was a gentlemen in the best sense of the word, and a wonderful conversationalist. Wit, humor and repartee he had in abundance, and he knew and practiced them with consummate discretion and tact. He came to the internes' room every day and talked over the cases he was to see or operate upon, smoking a cigarette or two or telling a good, clean story the while. We all followed him about the wards and witnessed his bedside examinations, heard his comments or prepared the patient and assisted his operation or observed his treatment. He was wonderfully well read and had an extensive medical and scientific library, as well as the choicest collection of real books in several departments of literature. These were his fads. He was a good sport, and had been an amateur boxer himself. He was a horseman, and the cleanest gentleman you would want to meet. He was in the Homeopathic School, though he had no faith in the theory and deplored the sectarian teaching by the Homeopathic professors, and his segregation from the regular practice of medicine that then existed. When he began the study

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of medicine the hide-bound and moss-backed conditions of the "alopathic" organization, together with the abuse of calomel and vivisections had led him to seek milder and more humane methods in the Hahnemann revolt. Having once started in homeopathy it was impossible to get out. The experience of Dr. Adams as well as my own led me to plan some way out of homeopathy and into regular medicine which would leave the track open. This was ultimately accomplished.

An incident occurred that showed the low state of morals and decency in the relations of the members of the regular and homeopathic staff, each of whom was appointed by a county commissioner. Dr. Charles Adams performed an "ovarectomy" upon a young woman for an ovarian tumor of ten pounds weight. The night after the operation she died of internal hemorrhages. The following evening several members of the regular staff, led by the most hustling of the group, went to the morgue and made a partial autopsy on this body, in the absence of Dr. Adams and in spite of the protest of his interne.

In the year 1880 and for many years afterward the medical colleges of Chicago atoned for their short terms and their paucity of medical education by a grand finale—a bishop and a brass band in a theatre, an afternoon distribution of Latin diplomas engrossed on real sheepskin, and a banquet at night at the best hotel for graduates and all alumni. There were collected the friends of the graduates from the country and friends and boarding house ladies from the city, though there was often also the embarrassment of the best girl and an "uncle" or two. This was the time when each member of the faculty patted the outgoing student on the back, shook his hand, and whispered some cheering words in his ear. It all meant only: "Don't forget your old Professor. He'll help you out in consultation." Bad and fulsome as it was, there were no caps and gowns rented for the occasion. There were no processions or recessions and no scholastic distinctions of attire. It was honest bombast, parvenue and crass. It was quite as pretty as the prevailing anachronisms.

When I went in the Cook County Hospital as interne, Bouton went out, and Davis and Percy Bryant remained. Dr. Bryant was my superior, and though much my junior in years he trained me with the severity of the navy, whose ideals were family traditions, his father being a retired naval officer of the line. He set me to writing histories of patients and then making records of physical examinations. Nothing could have been better for me. I set up at once a bacteriologic laboratory in a bath room

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of the new Administration building, and lacking agar and an ice chest I used boiled eggs and coagulated hydrocele fluid for my culture material. Strange enough my greatest technical difficulty lay in making gelatine beef tea. It was a hot summer and I could not get my gelatine to harden. I resorted at last to green fruit jellies. When autumn came, however, my difficulties disappeared.

It seems strange to look back upon the time when a cotton-topped test tube and a platinum needle was a source of professional ridicule in the County Hospital wards. It was expected then that every wound would suppurate, and therefore adequate drainage was Dr. Verity's greatest contribution to the treatment of compound fractures. His splint still remains. My test tubes told me the story of infection, and my examination of the silk and catgut showed the origin of ligature and stitch abscesses. It took a lot of time and energy and some strength of character to stand up against cajolery and ridicule from the internes with whom I ate three meals a day. Even my own room-mates and colleagues looked upon my demonstrations as somewhat mystical or sleight of hand.

These eighteen months at the Cook County Hospital were the happiest of my life. When the recently glowing platinum needle brushed over a raw surface of infected flesh and thrust into the solid beef tea gelatine made weeks before, resulted in a line of brilliant dots below an irridescent surface film; or, on the other hand, liquidified the gelatine to the depth of the puncture, the ecstasy of the alchemist possessed me. In those early days every trifling experiment was an original research and a radical discovery. Soon the clinical picture became related to the bacteriologic finding, and in the typhoids that every summer and autumn filled a fourth of our 800 beds the fact of a mixed infection in the production of relapses and complications discovered itself to me. With these new conceptions and their possible consequences firing my imagination, I walked the long corridors of the old County Hospital, my pockets bulging with cotton stopped test tubes, as inspired as an abbott carrying the relic of a saint in a jeweled pyx through the cloisters of his monastery. These were the happiest days of my life, and such happy days have come whenever my research has been rewarded with some result, giving a glimpse of the glorious possibilities of future investigation.

There was one experience during my interneship which had a very marked and profound effect on my subsequent educational,

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economic and social life. One morning in midwinter a patient came into the hospital and was assigned to my service. He looked well and talked rationally, though he had a temperature of 105 degrees F. My junior, Dr. Webster, was attending missionary meetings that day, and I took this man's anamnesis myself. He was a highly intellectual and Christian-spirited Russian Jew, and had been in Chicago only a few weeks, and in America two months. He had escaped from Kamskatka through Japan by the assistance of an "underground" then existing to assist Siberian refugees to America. When condemned to lifelong exile he was a matriculant at one of the Russian universities, and engaged in economic and political studies. It was through his interest in a dramatic society that he became involved in a nihilistic movement as the secret police conceived, and was sent with the whole dramatic company to farthest Siberia. He had a most peculiar malaria. I found showers of black granules in his blood, and I had his temperature taken every fifteen minutes for eleven days, and then six hours before the expected chill administered a single massive dose of quinine in hot lemon juice and syrup, followed by arsenic thrice daily for a month. During all this time the temperature and the blood were closely examined and recorded.

I became well acquainted with this educated Jew, whose English had been learned from books, and I was especially struck with his economic philosophy. During the previous ten years I read the *Popular Science Monthly*, which contained many of Henry George's articles, and my intimate knowledge of the conditions of life on the west side, now the Nineteenth Ward, gained through the dispensary service, prepared me to hear from a scholar the theories of Karl Marx, whose name first came to me thus by way of Siberia. It is enough to say that I was equally interested in the little pigment granules that flooded this man's blood at regular intervals and the economic philosophy which he taught me in the most remarkable English I had ever heard. I cured him of malaria with a single massive dose, and at the same time he cured me of the Adam Smith and John Stuart Mill economics, which had been pumped into my system at school. This man, whose name I have forgotten, was an idealist and had a vision of human development and progress which was fascinating and inspiring and worthy of four modern gospels and more than twelve disciples. Of all the superior minds I ever met none has surpassed this one. We had our conferences in the crowded tower room of the old Ward 3, looking out over the slums to

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the charming spire of the Jesuit Cathedral, the most inspiring picture in our permanent landscape. The sight of this beautiful spire always recalls the vision of society brought me by this Siberian exile.

My bacteriologic studies, though primitive and fragmentary, were pregnant with practical suggestions which my large clinic at the County Hospital gave crying instances for application. It seems necessary to get a view of our surroundings in 1884 to call attention to the scarcity of literature on the subject. Sternberg's Bacteria (First Edition) had just been published, and Kline's little monograph was a semi-popular treatise. There was no bacteriologic journal in any language, and Baumgarten's year book had not reached Chicago. I was obliged to import a few ounces of agar agar because none could be found by my old and dear friend E. H. Sargent in this country. My bathroom laboratory was ridiculed by the internes, who looked upon it as an extension of the high potency fad which their professors of medicine had caricatured in the annual lecture against homeopathy.

One autumn day a Scandinavian girl was brought into the hospital and assigned by rotation to the service of one of my attending surgeons, who was, fortunately for me, out of the city. Therefore I took full charge of the case. The girl was in shock from a compound fracture of both bones of the leg an inch or so above the ankle joint. The skin over the tibia was stripped off and rolled up near the knee, a ribbon two inches or more wide. However, the foot was warm. While I was making this preliminary examination and deciding upon the indications for treatment, the wall of the dressing room became completely lined with the full faculty of regular internes, whose manners and facial expressions were none too sympathetic, if not obviously critical. They were speechless as dummies.

After taking the pulse and rectal temperature and placing the patient on the operating table I ordered my assistant, Dr. Webster, to shave and wash the injured leg and also the skin flap while we made preparations for a "primary sterilization" of the wound. Up to this time there were but two methods of treatment for compound fractures in the Cook County Hospital. The most common was amputation. That modest, if not self-deprecating surgeon, Dr. Verity, was fighting hard for *adequate through and through drainage* and immobilization with the so-called *"Verity splint."* However, I stated the indication to my critical observers as primary disinfection and a relative coopta-

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tion by means of a posterior splint and *permanent* antiseptic dressing covered by a large plaster of Paris cast. Many aside remarks were made by by fifteen or more wall flowers, but most of my unsympathetic visitors stayed to see the painstaking and prolonged irrigation, the removal of many loose pieces of the tibia that had been crushed by the elevator that could not be stopped. We used gallons of antiseptics. The skin that had been torn from the front of the leg was basted lightly to the adjoining skin and zigzagged over the whole length of the denuded tibia. Many layers of "carbolized gauze" were carefully applied, and the whole leg covered with absorbent material to a point five or six inches above the knee and the whole foot and leg covered with a light plaster cast and suspended in a cradle over the bed, the toes alone being in view. One of the internes asked the head nurse of the ward to let him know when I got ready to cut off that leg, and for weeks afterward I occasionally caught one or more of them glancing at the temperature chart hanging on the foot of the bed, which exhibited nothing more than a long black horizontal line.

Some months later I had my first consultation over this patient. Her employer had been insured against such accidents, and Dr. Edwin Powell was medical advisor for the company. The girl's parents had that scholarly Swiss gynecologist, Henry Banga, to represent them. We met in Dr. Powell's office in the corner room of the second floor of a building where the Ashland block now stands. After hearing my story, carefully going over the history of the case lent by the County Hospital Custodian, Roger Sullivan, and examining the girl's leg, they pronounced the result admirable, and they took time to quiz me sympathetically on the novel bacteriologic aspects of the case. My fee for this consultation was five dollars, and it was worth a lot to meet two such splendid regular professional men. I was still technically a homeopath, and it was a professional crime for a regular physician to consult with one who had graduated at an irregular school. The consultation was a crucial and a sacred institution in those days, and the two groups of practitioners had less in common in those times than Christian Science healers and surgeons have today. I do not suppose that this was the first consultation between a homeopath and a regular in Chicago, but it was unique enough to be talked about and criticised quite sharply.

30 North Michigan Avenue, Chicago.

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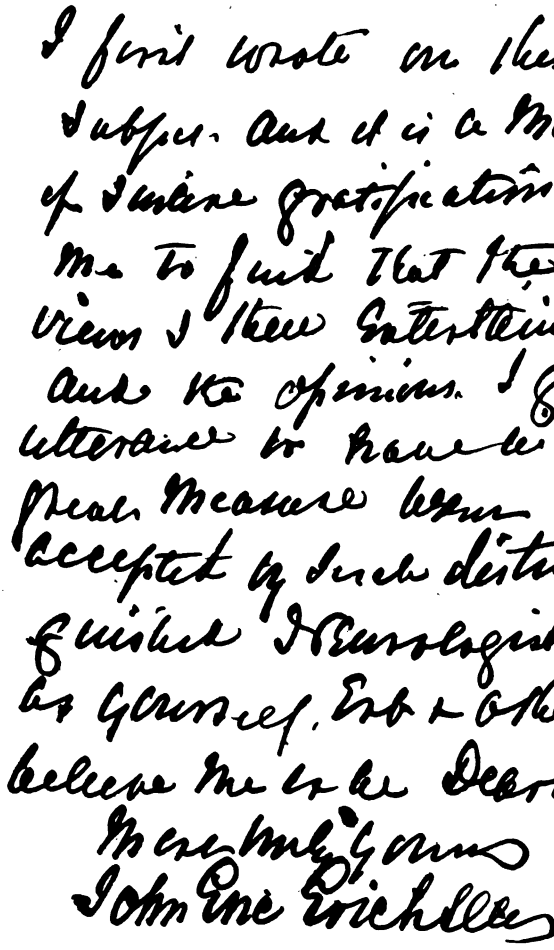

THE HANDWRITING OF SIR JOHN ERIC ERICHSEN (1818-96),

Teacher of Lord Lister, Professor of Surgery in University College, Surgeon Extraordinary to Queen Victoria, President of Royal College of Surgeons and of the Royal Medical and Chirurgical Society, author of "Science and Art of Surgery," and of "Concussion of the Spine," which Dr. S. V. Clevenger, of Chicago, named Erichsen's Disease.

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A Group of German Scientists

ILLUSTRATIONS FROM VICTOR ROBINSON'S LIFE OF "JACOB HENLE"

JOHANNES MULLER

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JACOB HENLE

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WILHELM WALDEYER

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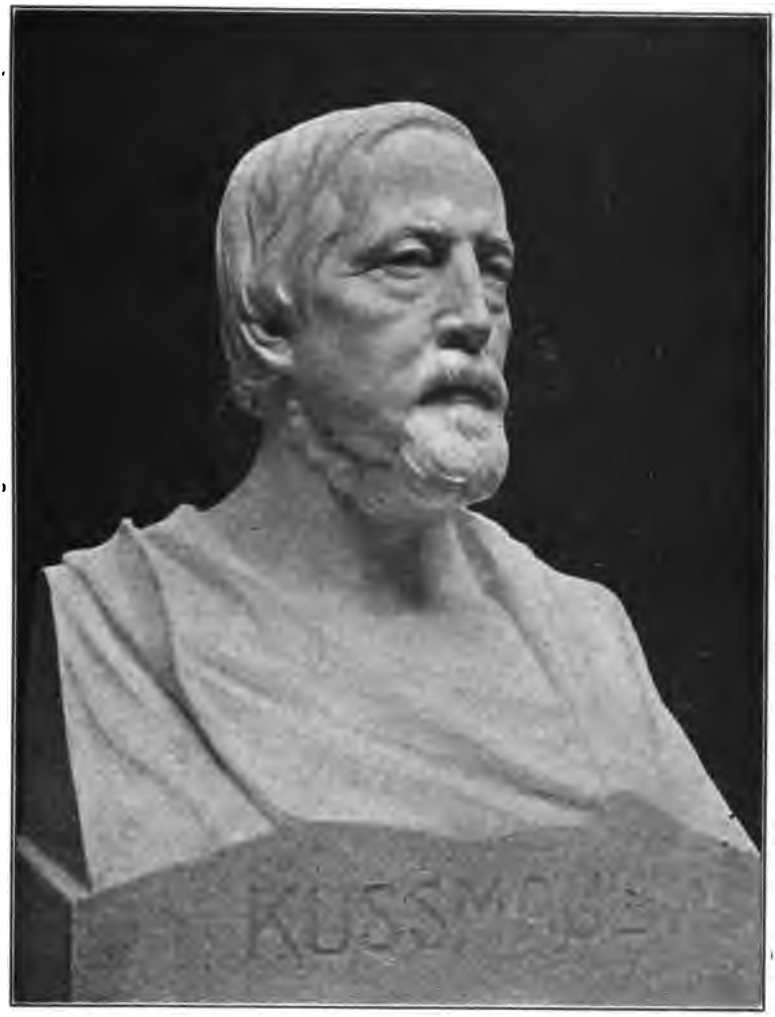

ADOLF KUSSMAUL

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MEDICO-HISTORICAL NEWS

At the second International Congress of the History of Medicine, which convened in Paris during the first week in July, and which was attended by representatives of Great Britain, Belgium, Holland, Italy, Switzerland, Spain, Portugal, Denmark, Czecho-Slovakia, Rumania, Armenia and Greece, the following papers were read:

Singer: **On a manuscript attributed to Guy de Chauliac.**
De Lint: **Anatomical terms used in ancient Egyptian literature.**
D'Alcalde: **Statutes and seals in ancient Spanish medical schools.**
Basmajain: **Notes on ancient Armenian medicine.**
Dubreuil-Chambardel: **Infirmaries of abbeys in the eleventh century.**
Villaret: **Origin of intravenous injection.**
Bertrand: **History of the plague in Antwerp.**
Buchet: **History of the druggist.**
Delaunay: **Traveling doctors in olden times.**
Dorveau: **The surgeons of Metz.**
Laignel-Lavastine: **Psychiatry in France in the eighteenth century.**
Guiart: **Obstetrics in Ancient Egypt.**
Thompson: **The pomander in preventive medicine.**
Jeanselme: **Dietary in Byzantine times.**
Fosseyeux: **Medicine in Italy in the time of Dante.**
Bouvet: **Medical advertisements in old journals.**

Prof. E. Cohen, of Utrecht, is president, and Dr. M. A. van Andel, of Gorinchem, Netherlands, is secretary of the Dutch Society for the History of Medicine.

The Congress of the Italian Society of the History of Medicine, which is scheduled to meet next October in Bologna, will present a special exhibit illustrating the history of dermatology.

Charles Singer, of Oxford, has been appointed lecturer in the history of medicine, in University College, London. As Dr. Singer is probably the best-equipped medical historian in England today, both he and the University are to be congratulated on the appointment.

Dr. Morris Fishbein, secretary of the Society of Medical History of Chicago, and editor of its **Bulletin**, has been elected Associate in the History of Medicine, Rush Medical College.

Professor Sudhoff, of Leipzig, has sent us his pamphlet on Vesalius, and Professor Neuburger has sent us his monograph on Medicine in Flavius Josephus. Both of these are well worth translating, and we will gladly loan them to any of our readers for this purpose.

W. S. Thayer has come into possession of three unpublished letters of Laennec, which he produces in fac-simile in the **Bulletin of Johns Hopkins Hospital**, December, 1920. Dr. Thayer has translated these letters, now more than a century old, and by means of a lens he was able to decipher several of Laennec's erasures.

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VOL. 28, No. 9 SEPTEMBER 1921

Medical Life.

MEDICAL LIFE

Tales of the Great Red Plague
Harry M. Robinson, M.D.

Treatment of Syphilis
A. L. Wolbarst, M.D.

Gastric and Duodenal Ulcer
John L. Kantor, M.D.

Revival of Hippocratism
Max Neuburger, M.D.

Rene Theophile Hyacinthe Laennec
Victor Robinson, M.D.

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(*Established* 1851)

VICTOR ROBINSON, M.D., Editor

VOLUME 28 NUMBER 9 | SEPTEMBER, 1921 | NUMBER TWELVE OF NEW SERIES

Section on Contemporary Medicine

TALES OF THE GREAT RED PLAGUE

By Harry M. Robinson, M.D.

ASSOCIATE IN DERMATOLOGY AND SYPHILOLOGY, UNIVERSITY OF MARYLAND; AND CHIEF OF DERMATOLOGY AND SYPHILIS, UNIVERSITY HOSPITAL, BALTIMORE.

In the daily routine of every physician there are tales unfolded, which if they could be properly transcribed would tear at the emotions of any human being. No one, aside from this profession, can really grasp the sordidness, the ignorance, and the selfish interests which move so many patients.

And in these days, when the pendulum is freighted with the study of syphilis, we have wondered whether the baring of the facts of a few cases, all of them brim full of sociologic interest, might not give us a clearer understanding of the fight to be waged before this scourge can be eliminated from the arena.

With this hope and object in view we have jotted down a few of the ordinary kaleidoscopic events that have transpired in our daily work, and if, after wading through these few incidents, even one reader is moved to a more vital conception of what this plague means, we shall feel that we have accomplished something, and that possibly we are that much nearer the goal of public teaching of Sexology, and that much further away from having our young taught, *first*, by their own grammar and high-school mates, who in their turn derived their knowledge from the gutter.

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NO. I

To whom shall attach the blame for one of the frequent criminal mistakes that are made, but never acknowledged, even when the price paid includes the involving of an innocent body with a dread disease such as Syphilis? When Dr. Q., a dentist, was seen by the writer it was because he was suffering from a sore throat of five weeks' duration. The nose and throat specialist to whom he had gone suspected the condition of being luetic, and the writer was asked his opinion. It was *definitely* luetic, although the patient could not see how that could be. It is true, he acknowledged a sore on his genitalia four months before, but the doctor who treated him had given him one dose of Salvarsan, told him to come back in one month's time, and upon finding the patient's blood negative, he had been discharged as cured.

Now Dr. Q. had suffered mentally as a result of this lesion, and felt that the only way to be free from such temptations thereafter would be to marry, and as the doctor told him he was cured, he proceeded to marry a nice, clean, refined girl 19 years of age, to whom he had been engaged for two years.

Upon agreeing as to the probable diagnosis of the condition in his throat, we took his blood and urged that that of his wife be taken as well for a Wassermann test. The report on his blood was positive, on that of his wife negative; but we took particular pains to impress upon him that his wife's blood should be taken again within two or three weeks. At this time his wife wanted to go home, a distance of about 150 miles, and Dr. Q. let her go and accompanied her. Three weeks later he wrote, excusing himself for not having brought his wife for the required Wassermann test, saying that they were partially quarantined, as his wife had German measles.

Our fears were well grounded; the eruption they thought was German measles was a well defined case of papular syphilis. Dr. Q. refused to allow us to tell his wife what her disease was, and she, having received two doses of Salvarsan and having been moderately ill for two days, refused to take any more medicine of any kind. And her husband did not finish a prescribed course of treatment.

Who was to blame, the first doctor who treated Dr. Q.? Dr. Q. for not finishing his treatment, and for forbidding us to tell his wife of the condition? Or ourselves for not telling the wife regardless of Dr. Q.?

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NO. 2

It is always strange how vehemently a man will warn his sister against association with a certain girl, but he himself, his father and his sister's sweetheart need not and do not follow this same advice. For instance, Gertie H. is a nondescript girl of 17 years, not actually good looking, with red hair and freckles; but she is young, and youth "gets" most of the males.

There was one peculiar thing about Gertie, and, through men's underground route, all the men knew it. It was that a MAN made her tremble, and her will became as air. She made dates promiscuously with any man who asked her, and it happened that for one dark night she made a tryst with Wm. B. on the old deserted porch of the bungalow a few blocks away. When he arrived at the appointed time and place his astonishment was great, for there were nine others before him, patiently waiting in line for their turn. She had made these engagements with no thought of remuneration, only the possible satisfaction of an appetite, and was "game enough" to go through with all of them.

Two weeks later she came to the clinic with syphilitic iritis and conjunctivitis and confirmatory positive Wassermann, plus gonorrheal vaginitis. Wm. B.'s result was a chancre; he heard that two of the married men he knew, who had been at the gathering, had the "clap." The Lord knows what the rest have. Yet these very men invariably warned their female relatives and their respectable friends from association with this unfortunate Gertie.

NO. 3

What impulse is it that urges a man to do things that under slightly different conditions might nauseate him? For instance, a man who would not only hesitate but turn away in disgust from a woman's lips that were dirty and grimy, let alone full of sores, would, without investigation of the organs of intimate relationship, welcome sexual intercourse with her, regardless of how profuse the vaginal discharge or how unclean the vagina.

Take Wm. K., who had worked pretty hard for several years without a vacation. At last he had the chance to take three or four days at Coney Island. He bade his wife and three children a fond farewell and went beachward to revel in the surf. On the second day there he was standing on the beach gazing at the few bathers in the water, when he noticed one handsome young woman waving her hand at him. He needed very little urging; the promised acquaintance looked too alluring, so with very little hesitation he went in. They played around in the water in an all

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too dangerous intimacy, until Mr. K. fell from grace and had sexual intercourse with this wonderful girl while still in the water. Mr. K. did not see his enchantress again during his stay. About three weeks after his return home he noticed a small sore on his genitalia. He treated it with powders the druggist gave him, but there seemed little improvement, and, in addition three weeks later, he noticed that his mouth and throat had become sore. He then went to a physician, who referred him to us and clinically, we found, he had syphilis. While under treatment, during the second month, he mentioned that two of his children had had sores on their lips a few weeks before, and we insisted on seeing them and taking their blood for a Wassermann examination. Both of these children of three and six years had positive reactions.

Who was to blame? The poor fool, or a society which is fearful of sexual education and prefers man to learn by experience alone?

NO. 4

The Splinck family presents a father who has little intelligence, but is apparently sane; a mother, a mental deficient, who has syphilis; four children ranging in age from one to four years. Various associations have interested themselves in the family, and for a while the mother was sent to the City Hospital to see whether it was not possible to give her better treatment there, and at the same time have the excuse of farming out the children who were not receiving adequate attention. But her husband and her relatives were not satisfied with the food she was getting and withdrew her. She is now pregnant again. What is the answer to this problem?

NO. 5

It is claimed that prostitution will be eliminated when economic conditions are bettered. We wonder. Will men be superflous when the female can support herself?

In other words, Gladys had a good "job," but she wanted a husband (or someone who could grant her respectable satisfaction). For the several years that we knew her, from the time she was eighteen years of age till she was twenty-eight, she "had" several young men. She was not well formed, but had golden hair and was healthy. Whether it was the animal attraction or her clinging ways, there were always men around her who were interested in her; but her apparent eagerness destroyed any illusions they may have had, and after a variable time the young men deserted her.

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One night, when the rest of the family were "out" and Fred, her newest suitor, was visiting, they locked the door . . .

Three or four weeks later Gladys developed a profuse vaginal discharge. Some of her friends urged her to seek medical attention, but the douches prescribed by the physician were of no effect. During the course of this vaginal discharge she noticed that her throat became very sore, and went to the same physician, who mopped her throat and told her to use Dobell's solution, but to no purpose. She was then advised to go to another physician, which she did, and received treatment from him, and it was during the time she was under his care that an eruption appeared on her trunk and upper extremities, which he thought was scabies. She was then sent to us for dermatological diagnosis and treatment. Our diagnosis was syphilis, maculo-papular type, and the Wassermann reaction was positive.

When questioned Gladys admitted sexual intercourse, and even a knowledge of the sore on Fred's penis, and what it probably meant. She "loved" him and wanted him for a husband.

So we set about arranging for the marriage. This was difficult, as she was then over twenty years of age, and Fred "knew his rights;" but after we accused him of having impregnated her he consented, and they were married and are getting along very well. But Gladys works yet, because she was *not* pregnant, and the prospects are that she will continue to work for some time to come, as she is making more money than Fred. She is satisfied, though, as she now has her MAN.

NO. 6

Do not get shocked and do not misunderstand; we merely ask a question. Is it better always to adopt a child instead of a dog? You hear so much against women wasting their affections on pet dogs, and condemnation for them for not adopting a little boy or girl who has been left an orphan. Mr. and Mrs. M. had no children, and following the advice of several friends they one day went to one of the asylums and picked out a healthy, pretty little girl. They lavished upon it all the affection and gifts they would have given to one of their own. Ruth deserved it. She was a nice child, well mannered, quiet, and in all very desirable. At the age of 9, six years from the time she was adopted, she developed a little lump on her left thigh. No attention was paid to it at first, her foster-father thinking it would disappear, but it steadily grew. Physicians who saw her could do nothing for it. When we saw her she had several large, well defined ulcers

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about one-quarter of an inch in depth, with precipitate edges, the ulcers being arranged in a serpiginous outline, the area involved being about 18 inches in length, from 2 to 3 inches in width, and extending from about the region of the third lumbar vertebræ to about two inches beyond the knee. The clinical diagnosis was gumma, and the Wassermann was four plus positive. We gave her three courses of intensive treatment of mercury and salvarsan, and discharged her with the lesion cured, but the Wassermann still positive. It was a shock to the foster-parents, but they were loyal to their choice, stating they would keep Ruth with them and give her a chance in life, only advising, when the time came, to keep from marriage. Pleasant prospects for all concerned:

NO. 7

I first met the Blakely family through ministering to the little 9-year-old Ellery. His right knee was swollen, resembling in size a large canteloupe. The other knee was normal. The boy suffered greatly whenever he walked. For a few days I was puzzled, until his mother told me that some two years before he had an eye disease which was diagnosed by one of the specialists in town as syphilitic keratitis. The rest was easy. Under mixed treatment the knee cleared up, and so far as we know the boy has never had a recurrence of that trouble. He did not care to take medicine, so his mother never urged him, and when the knee cleared up treatment was stopped.

Some months later I made the acquaintance professionally of the mother during one of her routine frequent excursions to the land of abortion. She sent for us very hurriedly as an emergency case, and we found her bleeding profusely, passing suspicious clots. Through our ministrations she recovered and gave the following history:

Her little girl, it appears, had some syphilitic condition of the eye, which in clearing up left her cross-eyed. The boy I have already spoken of. She herself had never had any stigmata of syphilis, but dreaded giving birth to any more children who might be syphilitic. Although her creed forbade absolutely any radical procedure, she said she preferred to know that no more syphilitic children would be brought into the world through her instrumentality. Her husband, we found out later, had syphilitic orchitis, associated with hydrocele, but seemed to be a willing provider. It was not until a month later that I found out that she was being impregnated by some other man, and that her husband was only occasionally having sexual intercourse with

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her. She did not seem to worry very much about the possibility of passing the disease to the other man, whom she said she loved.

NO. 8

When we first saw little Georgie, to all practical purposes he was blind. He could not see, and the faintest ray of light in his eyes gave him extreme pain. We were called to do a Wassermann test on him and found the result positive—a four plus. For three months we intensively treated him with arsphenamine and mercury. As he began to improve, we became interested in his family, and finally induced the father and mother and two sisters to undergo the test. All were positive.

George's two sisters were pretty little things without an apparent blemish. But as all were syphilitics we instituted treatment to the four members of the family. It was not very hard to induce George to continue treatment, as we were able to promise good sight to him. But the little girls gave us trouble. With apparently neither rhyme nor reason we were sticking needles in their arms every week.

In the case of the children, we were able to obtain their return until their treatment was completed. But in spite of all we could do, and although we impressed upon the father that he was to blame for infecting his whole family, we could not induce either father or mother to complete their treatment. And we could not force them either.

Without our Social Service Department we would not have been able to follow up and start treating this nest of syphilis.

NO. 9

We do pay, not always in the expected way, but we pay. James McC., during his student days in a professional school, joined a group of good fellows one night to make the rounds of the town. Two weeks later he noticed a small papule on the glans penis. He saw one of the surgeons associated with his university, who treated him with one dose of salvarsan. For two years following this he received mercury treatment, and at the end of that time his Wassermann was still positive. During his last year in school he came to us with no clinical lesions, but with a positive Wassermann. We put him on one intensive series of six doses of salvarsan and prolonged mercury. Toward the end of his mercury treatment he asked us to perform an abortion on a girl whom he had impregnated. In the argument that followed it appeared that he cared very much for the girl and would marry her, but was afraid of the baby being syphilitic. We

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assured him that the probabilities were that the child would not be syphilitic, particularly if the mother's Wassermann was negative, which it was. So he married the girl. Because of the history of syphilis we went out of our specialty and delivered the mother of an apparently normal child.

Two years later McC. came for another Wassermann with the information that his wife was again pregnant. All blood tests were negative. A short time ago he returned for still another blood test, his wife being four months pregnant. His blood was positive in all dilutions! He now has but one fixed idea in view before he attempts further treatment, or before we have blood taken for tests on his wife and children. Nothing can alter his decision that the present fetus must be gotten rid of. He tells us he is going to make the rounds of all the possibilities until he finds someone who will perform the abortion. Then after that is over he will come back. He is not thinking of himself, however, nor of the risks he or his wife run, only the fetus must be gotten rid of. Is he wrong?

405 N. Charles St., Baltimore, Md.

THE MODERN TREATMENT OF VENEREAL DISEASES

VII—The Treatment of Syphilis

By Abr. L. Wolbarst, M.D.,
CYSTOSCOPIST AND CHIEF OF UROLOGIC CLINIC, BETH ISRAEL HOSPITAL; VISITING GENITO-URINARY SURGEON, WEST SIDE DISPENSARY; CONSULTING UROLOGIST, MANHATTAN AND CENTRAL ISLIP STATE HOSPITALS, ETC.

Inasmuch as individuals differ in their infectious as well as their response to therapeutic measures for the relief of these infections, it is obvious that there cannot be any standard method of treatment in so protean a disease as syphilis. However, certain elementary principles may be laid down which can be followed with safety, though it always should be borne in mind that every case should be treated strictly according to its own merits.

Generally speaking, treatment may be classified as hygienic, symptomatic and specific, irrespective of the stage of the disease; but this is particularly important in the first and second stages of the infection.

Hygienic treatment simply means, first, that the patient shall be kept in his best physical condition, so as to resist the spirochetal attack to his best ability, and, secondly, that he shall not become a menace to those with whom he comes in contact. This means that he must live a simple, decent life, taking wholesome,

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plain foods, and plenty of fresh air and avoid alcohol; alcohol and syphilis do not go well together. Tobacco may irritate the throat and thus encourage the appearance of ulcerations and mucous patches. It should be avoided particularly in the early stages of the disease. Sexual indulgence likewise should be interdicted in the early stages, because of the danger to the sexual partner rather than to the one already infected.

Symptomatic treatment, as the term clearly indicates, depends entirely on the stage of the disease, and will be considered in conjunction with the specific treatment in the three stages of the disease.

Specific treatment is the therapeutic keystone in syphilis. It is based on the fact that syphilis is not a local disease, but constitutional, probably from the moment at which infection took place. Even though the symptoms may be local in character, we are always dealing with a generalized infection, which requires most intelligent, patient and skilful treatment.

Beginning with the first stage—the stage of chancre—it is well to remember that this is but a single manifestation of the general infection, and consequently constitutional treatment should be instituted as soon as a definite diagnosis has been made. This, of course, assumes the finding of the spirochete pallidum, in addition to the clinical evidence produced by the initial lesion. In my private practice it is my custom to excise every chancre which is so situated that excision is possible. I do this because excision undoubtedly removes a powerful spirochetal focus at one stroke, and thus relieves the blood stream of the necessity of combatting the effects of this large number of spirochetes. Clinically it has been my observation that patients in whom the chancre has been excised run a much milder course and respond much more easily to therapeutic measures than those in whom the chancre has been permitted to remain.

When, however, the chancre is permitted to remain, the diagnosis having been made beyond any reasonable doubt, local treatment consists in keeping the lesion covered with a strong mercurial ointment or bichloride solution. I prefer the official Ung. Hydrarg, even though it be somewhat unclean and may stain the underwear of the patient. I think it is the most effective local application for assisting in the rapid disappearance of the chancre.

An initial lesion, syphilitic in character, *never* should be cauterized for any purpose or on any pretext, especially if there is any doubt as to the character of the lesion. Cauterization does

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not help the specific lesion in any way, but it often does retard healing by setting up an acute inflammation of the ulcer, and in doubtful cases it may change the appearance of a chancroid or an herpetic ulcer so that it may be mistaken for a specific lesion.

The constitutional treatment aided by the local mercurial application can be depended upon to rid the patient of the specific lesion in a very short time. In a vigorously treated case the chancre ought not to be visible longer than ten days or two weeks, in the average case.

With the discovery of the spirochete by Shaudinn, and the introduction of the arsphenamine treatment by Paul Ehrlich, there is no longer any reason for delay in the institution of the treatment. In fact there is a growing suspicion in my mind that many persons are being treated for syphilis who never had the disease, because of undue haste in deciding that the initial lesion was specific. Early treatment is highly desirable, but the lesion must be proved specific beyond any reasonable doubt before this step is instituted, because there is no way of correcting the mistake once treatment has been begun. In an undoubted case it is essential to begin treatment immediately, the sooner the better, for every day sees an increase in the virulence of the infective process which the blood stream is called upon to combat.

This constitutional treatment may be given intravenously or intramuscularly, or both, according to the views of the practitioner, but the general opinion of present-day syphilologists is that it is best to begin with arsphenamine intravenous injections, followed by intramuscular injections of some form of mercury.

Internal medication has been relegated to the past; the same may be said of inunctions, except in special cases in which they seem to have a definite advantage in late stages of the disease. Generally speaking, however, both these methods may be considered obsolete.

Mercurial plasters, fumigations and inhalations have a certain degree of merit, but their disadvantages are so great in comparison with modern methods as to render them practically useless and altogether obsolete. There are occasions, however, when they are of distinct service, and it is well that they should not be forgotten, because they are capable of distinct service in their respective fields.

Up to the introduction of arsphenamine, the intramuscular injection of mercurial salts was the most popular and efficient method of treatment at our command. Of the soluble preparations, the bichloride and the succinimide are deservedly the most

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frequently used; among the insoluble, salicylate of mercury and gray oil are the most popular.

Opinions vary considerably as to the respective advantages and merits of these preparations, but the consensus of opinion is decidedly in favor of the insoluble salts. I believe quicker results are obtained by the use of the soluble salts, but their effect is apt to be less lasting than the effect produced by gray oil or the salicylate. Moreover, the soluble salts must be given frequently, at least three times weekly, whereas one injection of the others is sufficient. The element of pain is most important in this connection. Obviously any fluid, even water, injected within the tissues must of necessity produce a certain amount of pain. This pain is the result of the distension in the tissues, apart from the chemical irritation produced by the substance injected. As between the soluble and the insoluble salts, I believe there is little difference. All of these substances are more or less painful, and the amount of pain suffered will depend very largely on the susceptibility of the patient to pain in general, and the technic employed by the physician.

Within the past few years various manufacturers have produced a very satisfactory substitute for the old-time solution or suspension kept in a stock bottle. Gelatine capsules are filled with an exact quantity of the preparation, so that there can be no doubt as to the character or the quantity of the suspension or solution injected into the patient. These capsules, marketed under various trade names, constitute a decided improvement in the administration of mercury, and enjoy well deserved popularity. Either the soluble or insoluble salts can be had, in varying dosage to suit the needs of the particular case.

A few words relative to the technic of intramuscular administration may not be out of place. Strict asepsis is the first consideration, for otherwise septic infection may take place and an abscess may result. The syringe should be all glass, and the needle, sharp-pointed, about 1½ inches long and 18-20 gauge. The upper segments of the buttocks are selected for the injections, alternating and selecting a different point at each injection. The skin is sterilized, preferably by rubbing with alcohol and ether, the latter having a distinct anesthetizing effect on the skin at the point of injection. Iodin may be used as antiseptic, but the alcohol-ether combination has been found far superior in my practice.

The syringe having been filled with the suspension or solution, as the case may be, the needle is plunged quickly as far as

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it will go into the buttock at the selected spot, and a moment or two is allowed to pass to see if there is any flow of blood, which would indicate that the needle has punctured or entered a blood vessel. In such an event the needle is removed and plunged into another spot. If no blood is visible, the syringe is attached to the needle, and the substance slowly injected. This having been done, the needle and syringe are rapidly withdrawn, and the area rubbed vigorously for a few moments so as to scatter the mercurial substance and prevent too great an accumulation at one fine point. If there is any appreciable bleeding after the needle is withdrawn, the bleeding point is covered with a little collodion, or a small square of adhesive plaster. These injections are given once weekly, or more often, depending on the character of the case and the preparation used.

If for any reason the patient is unable to take the arsphenamine treatment, which is the standard treatment throughout the world at the present writing, excellent results will be obtained by the use of these intramuscular mercurial injections. Like any other form of anti-leutic treatment, it must be administered systematically over a long period of time.

The favorite method of systemic treatment, however, includes the administration of arsphenamine or its modifications, as the most important single element. Having had the privilege of studying the effects of the original "606" with Ehrlich in Frankfort and with Wechselmann and others in Berlin in 1909, I am still of the opinion, formed at that time, that the intramuscular injections, as administered by them, were far more effective than the intravenous injections of the present day preparations. This feeling was shared by Prof. Ehrlich himself, in conversation with me a few months before he died. The extreme painfulness of the intramuscular injection, however, has rendered this most efficient method of administration practically impossible. Various attempts have been made to make possible this form of injection, but they have not met with any appreciable measure of success. Nevertheless it is to be hoped that the future may bring forth a painless intramuscular injection of arsphenamine. I believe such an injection will be much more effective than the intravenous method, because of its longer persistence in the body tissues.

We have not yet perfected a standardized method of treatment with arsphenamine for obvious reasons. Generally speaking, however, there has been developed a systematic scheme of treatment which has been adopted universally and has given widespread satisfaction. This systematic method will be de-

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scribed briefly, although it should be borne in mind that it is capable of innumerable variations, determined by the views and experiences of the syphilographer and the needs of the patient.

Immediately on the diagnosis being made, an intravenous injection of one of the arsphenamine preparations is given, half the maximum adult dose being administered the first time. This is done because of any possible idiosyncracy towards arsenic in the patient; it is well to begin with this smaller dose as a matter. of precaution. Every four or five days thereafter, for six to ten doses, a full dose is administered. Between these injections an intramuscular injection of insoluble mercury is given, the patient thus receiving six to ten injections of each.

By some the mercury is administered the day following the arsphenamine; others inject the arsphenamine but two days apart; the aim of everyone, however, is to get as much arsphenamine as possible into the patient's system in the shortest time, at the same time protecting him against arsenic poisoning.

The six to ten arsphenamine injections constitute the first "course." This is now followed by a course of mercurials, usually about twenty-five in number, given once or twice weekly if the insoluble salts are used. The frequency of these injections will depend, as above mentioned, on the character of the preparation employed and the degree and intensity of the infection. In my personal experience, covering many cases, I have found that an injection of arsphenamine every four or five days, with an intramuscular mercurial injection three days later, offers the most satisfactory plan of treatment. This mixed course is followed by a series of twenty-five mercurials, preferably the salicylate or gray oil, once weekly.

This course having been completed, the patient ought to be without symptoms of any kind, and serological tests at this time ought to give a negative reaction. It is well to wait one or two months, during which a test is made each month, and then another series of six arsphenamine injections and twenty-five mercurials is administered. The serologic tests again are made. Now we wait three or four months without treatment, with monthly serologic tests, and a third series of injections given. This usually will be sufficient treatment for the average case, though it is better for the patient to take a fourth combined course. He then has the satisfaction of knowing that he has been given a thorough course of treatment—the best that our present knowledge of syphilis and its therapeutics has to offer. Thereafter, for at least two years, serologic tests should be made every three months;

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the spinal fluid should be tested each year, and if at the end of that time the reaction of the blood and spinal fluid is persistently negative he may be declared cured, as far as our present knowledge permits us to go.

I believe it is well for the patient who has once had syphilis to take a course of treatment every year, as long as he lives, as a matter of insurance, as it were, against any possible outbreak of the disease. This in spite of a persistently negative sero-reaction. No man can say that a syphilitic patient is absolutely cured and requires no further treatment. It may be permissible for the patient to marry and have children, if he has had sufficient treatment and a persistently negative reaction, but no one can say that he may not suffer a recurrence in his nervous system or elsewhere in spite of his negative reactions. Consequently it is best for the patient to protect him against any possible recurrence by such "insurance" as has been suggested. Neither the patient nor his physician will have cause to regret such procedure. Both, however, may find reason to regret the omission of such "insurance," when it will be found to be too late to avoid the serious consequences which often follow such neglect.

The technic of arsphenamine administration will be described briefly. The patient should eat nothing for five or six hours previously, and it is well that the bowels should have been moved by a mild cathartic given the preceding night. An injection never should be given without this preparation, otherwise serious reaction, even a fatal outcome, may result.

The patient lies on a table, the clothing at the neck loosened, the arm to be injected resting at right angles to the body on an arm rest. The inner surface of the elbow is cleansed with iodin or alcohol and ether (I prefer the latter combination) and covered with a sterile towel. The arsphenamine solution is now prepared.

The ampule, before opening, should be immersed in 95% alcohol for fifteen minutes, so as to detect any crack or aperture not primarily recognizable. (Should such a breach be discovered, the contents of the ampule should be discarded.)

Boiled, freshly distilled water at room temperature should be used. The brand known as Arsenobenzol requires the use of boiling water. No more solution should be prepared at one time than can be given in 30 minutes.

With a graduated pipette or burette add 0.9 cc of normal NaOH for each 0.1 gm. of the drug (i.e., 5.4 cc for each 0.6 gm.). The alkali should be added all at once and should quickly convert the acid salt solution of arsphenamine into the alkaline salt solution, or the disodium salt of the arsphenamine base. This represents slightly more alkali than just enough to re-dissolve the precipitate formed by the addition of this reagent.

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The concentration of the drug should not be greater than 0.1 gm. to 30 cc of final solution. The practice of using concentrated solution carries a distinct hazard to the patient.

The gravity method only should be used. Where several patients are to be injected from the same solution, the container for the solution should be graduated. It is a great convenience to have a glass stop-cock near the glass tubing, which serves as a window just above the needle in order to control the rate of injection. If no stop-cocks are at hand, the rate can be controlled by the size of the needle and the height of the column of fluid. A No. 18 gauge is the best size needle.

The physician should pay particular attention to the rate of administration, and in no case exceed 0.1 gm. of drug (30 cc of solution) in 2 minutes. This point is especially emphasized, because it is believed that excessive rapidity of adminstration accounts for more unfavorable results in the use of arsphenamine than any other one cause.

The solution being ready, the towel is removed from the arm, a tourniquet is placed above the elbow fairly tight, and the patient closes his hand tightly. This causes the veins at the elbow to stand out prominently. In nervous individuals a little novocain may be injected under the skin with a very fine needle for the anesthetic effect, but this is rarely necessary. The sterilized needle is then inserted into the veins selected for injection, in the direction of the blood current. I make it an invariable practice to collect blood in a sterile test tube for a serologic test preceding each injection. The needle should be sharp, but not too pointed—that is, it should be beveled. The tourniquet is loosened and the hand opened. If the point of the needle is properly within the vein, blood will be oozing from the needle.

At this point the technic of operators differs. Some inject a little saline solution to make sure that the needle is within the lumen of the vein; some use plain distilled water; others go right ahead with the arsphenamine solution. It is highly important that the rate of administration be not too rapid. In no case should the fluid enter the vein at a greater rate than thirty cc. in two minutes. The entire amount of solution being 180 cc., the injection should take no less than twelve minutes. It is the censensus of opinion that excessive rapidity of administration accounts for more unfavorable results than any other single factor.

The full amount of fluid having entered the vein, the needle is withdrawn, the puncture is covered with a little sterile collodion and the patient rests on his back for ten or fifteen minutes. It is well that he should remain quiet, and eat little, for the rest of the day. I find it desirable to have the patient drink much water both the day before administration and for several days there-

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after, this helping to flush the kidneys and thus avoid any ill effects arising in those organs. It goes without saying that the urine should be examined both before and after the injection repeatedly.

Neoarsphenamine was developed by Ehrlich in response to a widespread demand for a preparation that was less toxic and could be prepared more simply. This was introduced by him as "No. 914," the trade name being Neosalvarsan; it is now called Neoarsphenamine. I believe this preparation is somewhat less effective than arsphenamine, but in view of the ease with which it is made up, and its greater freedom from toxic effects, I believe it is to be preferred in routine practice for these reasons. I use it almost exclusively in private practice. Neoarsphenamine may be given, and preferably in my opinion, in concentrated solution; that is, in about 20 or 25 cc. of water. The technic of administration is as follows: The arm having been cleansed as above described, an all glass Luer syringe of 25 cc. capacity is filled with sterile distilled water at room temperature. The needle is attached to the syringe. The ampule is taken out of its alcohol bath and the fine point filed off. Five cc. of the water is then deposited within the ampule through the needle, and the ampule shaken for a minute or two, when it will be found that the entire contents have been dissolved thoroughly. This solution is then drawn up into the syringe, and we thus have 25 cc. of clear yellow solution containing the required amount of drug.

The arm is bound with the tourniquet, the hand is closed tightly and the needle inserted. If desired blood may be collected for a serologic test, as I invariably do. A little water or saline solution is then injected through a second syringe, and if the needle is found perfectly located within the vein, the neoarsphenamine solution is slowly injected. This should take not less than four minutes, so as to avoid serious reaction. The syringe is now disconnected and withdrawn, and a few drops of blood permitted to escape through the needle, which is now withdrawn and the injection is complete. A little collodion covers the site of the puncture. The patient rests, as above described.

It is manifestly impossible to cover this entire subject of arsphenamine within the compass of one brief article; the physician attempting to do this work should perfect himself for its performance as for any major operation in which the life of the patient is at stake. Death after arsphenamine administration is not so unusual that its possibility may be disregarded. It is quite possible that the vast majority of fatalities have been due to

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faulty and careless technic. For fuller details of this operation the reader is therefore referred to the many textbooks on syphilis that have been written within the arsphenamine period. Earnest study of these works will be found most profitable to the physician and patient as well.

Quite recently a much advertised preparation known as Silver Salvarsan has been placed on the market. It is still in the experimental stage, but it has its advocates who feel that it is superior to the older arsphenamine preparations. The principal advantage for it seems to be its greater strength combined with a diminished toxicity. The maximum dose employed is 0.25 gramme dissolved in 10 to 20 cc. of distilled water or saline solution per decigramme of drug employed. Advocates of this preparation recommend that mercury be not used in conjunction with it; but foreign observers seem to be unagreed on this point. Silver Salvarsan is given in heroic doses. Its strongest advocate recommends that the patient be given three courses of twelve, ten and eight injections, respectively, with an interval of one month between the courses.

Still another very effective method of administering neoarsphenamine is per rectum. I have been using this method for a year or two in patients in whom the intravenous method is inadvisable or impossible. It is especially applicable to children and to adults in whom the veins are difficult or impossible for injection purposes. A recent writer states that neoarsphenamine can thus be given safely in doses as large as 4 grammes. He finds that arsenic is absorbed into the blood after such injections, and that larger quantities are eliminated in the urine than after ordinary intravenous injections; that arsenic persists longer in the blood in perceptible quantities after the rectal method with larger doses than after ordinary intravenous methods, and that about equal concentrations in the spinal fluid are obtained with either method.

Finally, the method of intramuscular injection is to be considered. As has been stated above, we have not yet produced a painless intramuscular injection, though various attempts have been made along these lines.

The systemic treatment having been considered, the symptomatic treatment may briefly be taken up. In the primary stage, the chancre is the only lesion, and is to be treated in the manner described earlier in this paper. If the case is first seen in the secondary stage, the treatment is adapted to the lesions present; that is, mucous patches or ulcerations in the mouth or on other

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mucous membranes. Nothing will remove these manifestations of syphilis so quickly and thoroughly as well directed, vigorous, specific treatment. As an adjuvant, however, it is well to administer an antiseptic mouth wash, mild and non-irritating, at the same time using a local caustic for the patches or ulcerations. One of the most efficient, in my experience, is the local application of a 2 per cent. aqueous solution of chromic acid, applied two or three times daily. Local lesions respond very nicely to this treatment. In any well treated case, however, secondary ulcerations and patches ought not to occur.

The symptomatic treatment of tertiary syphilis may be summed up in a very few words. The subject is a very large one, involving every organ and tissue of the body. Treatment must be directed to the tissue or organ involved, in addition to which vigorous systemic treatment is imperative. In short, the treatment of syphilis is to be considered as consisting of the general specific treatment with arsphenamine and mercury, plus such local and symptomatic treatment as the particular case demands. As previously stated, the treatment of syphilis requires extensive study and experience, which can be obtained only by a close scrutiny of the growing literature on this vast subject and its application to the case at hand.

As to the subject of cure in syphilis, it may be stated briefly that we are in no position to say definitely that such a state has been attained in any patient. Only the future can tell whether any particular patient has been cured or not. If he has gone for four or five years without treatment of any kind, and in that period has been perfectly well and shows a persistently negative serologic blood and spinal fluid, it is safe to say he has been cured; but it is impossible to give him any assurance that the disease will not reappear at some later date in some tissue or organ of the body. The single watchword and key to success in this disease is "plenty of treatment continued for a long time"—at least two years—the more treatment and the longer the period over which it is spread, the better the chances for a complete cure.

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A CASE OF GONORRHEAL STOMATITIS

By N. E. Aronstam, M.D.

The occurrence of gonorrheal stomatitis is quite infrequent. Tilden, Schlotz, Cutler, Norris, Krosky, Leyden and others have reported a number of cases occurring in their practices. While

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this condition is not of grave clinical import, yet its scientific aspect is of interest.

While a great number of cases occur in infants at birth, while passing through the parturient canal, there are also cases found in adults, directly or indirectly traceable to gonorrheal contamination from without. While infected utensils may be the source of infection of the mouth, the most probable and frequent cause is buccal coitus. The literature perused by me, and my own clinical observation lead me to believe that in the vast majority of cases buccal gonorrhea is the outcome of coitus ab orem. The period of incubation varies from two to five days, three days being the average interval of development. It manifests itself by the appearance of yellowish-gray foci or zones on the mucosa of the tongue, palatal arch, the anterior pillars and the tonsillar tissue itself; the alveoli of the last molars may also be infected; at times we notice exuding from the tonsillar crypts variable quantities of pus.

The mucous pellicle when removed exhibits a raw, denuded and slightly bleeding area beneath. There are variable degrees of subjectiveness, such as a feeling of burning upon taking hot beverages and condiments and pain on mastication and deglutition. In certain instances the tongue may be considerably swollen and any movement thereof may occasion considerable annoyance.

The temperature is elevated, but rarely ranging above 101, and there may be slight constitutional disturbances. We are enabled to discover the causative organisms by the usual methods of procedure, either by the Schlotz or Gram stains. Although cultural evidence is not always available, still, as in my case, culturing the smears may prove successful.

Gonorrheal stomatitis is most often encountered in the female, as she is more apt to be the victim of unnatural practices than is the male. At this juncture one may question the number of so-called aphthous stomatitis found in adult females, which in the absence of microscopic evidence may not actually be instances of gonorrheal invasion. To illustrate this point, the following case history may prove instructive and interesting, and may make us alert in the future as to the real etiology of cases of stomatitis.

Miss A. L., age 22; family and past history negative. St. Pr: She submitted to buccal coitus because at that time her paramour was suffering from acute gonorrheal urethritis, and was even then under my observation. Three days after she developed the following local manifestations in the oral cavity; on both tonsils

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there were visible a few superficial erosions; a number of whitish areas were seen near the anterior pillars; the tongue also exhibited similar abrasions. There was present a bilateral concomitant cervical adenopathy; smears were taken from the various foci with positive findings, showing both extra and intracellular organisms and many pus cells; an ascitic agar tube was inoculated with the buccal secretion, incubated and cultured; smears taken from the latter elicited intracellular organisms. To exclude vaginal gonorrhea, smears were taken from the labia, vaginal mucosa and meatus urinarius, with negative findings; only staphylococci and colon bacilli were demonstrable.

Treatment consisted of occasional swabbing of the entire pharyngeal and oral cavity with weak solution of silver nitrate and an astringent mouth wash was prescribed. The patient made a rapid and complete recovery within about a week; the erosions gradually disappeared, the cervical adenopathy subsided and the subjective symptoms had entirely gone by the fourth or fifth day. Subsequent microscopic examinations repeated at intervals showed an absence of gonococci, but with the usual flora of the mouth present.

Conclusions: While such cases are rare, we should always be on the alert in dismissing cases of stomatitis as simple without having recourse to a complete history and thorough microscopic examinations. No doubt many an instance of gonorrheal stomatitis has been overlooked and treated as an aphthous condition. It is a delicate matter to inquire into the personal history of the case, yet we should always keep the scientific aspect before our eyes, and never take anything for granted. The microscope should always decide the final issue.

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THE MODERN TREATMENT OF GASTROINTESTINAL DISEASES

V—The Treatment of Gastric and Duodenal Ulcer

By John L. Kantor, M.D.,
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The "Carbohydrate Diet." — This plan of feeding is very frequently associated with a preliminary period of starvation. The conditions determining the duration of food abstinence have already been stated. When feeding is resumed it is very gradual and sparing. Among the foodstuffs selected (Smithies) are the

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liquid carbohydrate preparations, such as barley water, rice gruel, thin cream of wheat, thin (creamed) vegetable soup, etc. Some of the simpler foods are prepared as follows:

Barley Water. Barley, one teaspoonful; water, one pint. Mix barley with one ounce of water into a smooth paste free from lumps. Pour into a sauce pan containing one pint of boiling water. Stir constantly over the fire for 20 minutes while boiling. Strain through gauze.

Oatmeal Gruel. Oatmeal, two heaping tablespoonfuls; water, one quart. Boil down to one pint. Strain through gauze. Pinch of salt to taste.

Rice Water. Rice, two tablespoonfuls; water, one quart; milk sugar, one ounce. Cook in double boiler for 1½ hours. Strain and add boiling water to make up one quart.

Arrowroot Gruel. Arrowroot flour, one teaspoonful; water, one pint; milk sugar, five teaspoonfuls. Cook for 20 minutes. Strain.

From four to six ounces of such warm liquids are given every hour during the day. By the second week small amounts of boiled milk, soft eggs, rice, and even boiled chicken (minced) are added to the diet. As the amount of food is increased, the intervals between feedings are naturally lengthened. By the third or fourth week soft white bread, finely minced steak, potatoes, purees, macaroni, and weak tea or coffee may be given. After the fifth week a gradual return is made through the *convalescent ulcer diet* about to be described to the *standard bland diet* already given in the section on the treatment of "gastric irritation." This diet, which is liberal enough in its choice to satisfy any reasonable craving, should then be continued for the remainder of the patient's life.

The indications for a carbohydrate diet may be summarized as follows:

1. The patient is robust and well nourished.
2. The gastric acidity is not high (?).
3. The patient prefers the diet to that of milk and eggs.

The "Protein Diet."—In this plan of feeding highly albuminous food is given in steadily increasing amounts from the first day of treatment, there being no preliminary period of starvation even after hemorrhage. This diet is generally preferred in patients weakened by bleeding, by long-standing malnutrition, or by prolonged vomiting.

The classic example of this diet is the form advocated by Lenhartz. This consists of a detailed program of feeding for a period of 14 days, during which absolute rest in bed is insisted upon. The basic material is milk and eggs, to which other foodstuffs are gradually added, the amount of each being steadily

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increased from day to day. The milk and eggs, together with all the utensils used in the first few days' feeds are kept ice cold. During the first ten days the diet is very strictly followed, one-twelfth of the total daily feeding being administered every hour during the day. The first day two eggs and 100 c.c. (3 oz.) of milk are allowed. The eggs are then increased one per day until the eighth day and the milk 100 c.c. per day until the tenth day, eight eggs and 1000 c.c. (one quart) of milk representing the maximum daily amount of these substances. On the third day sugar is added, on the sixth scraped beef, and on the seventh rice. During the second week zwieback, butter and chicken are given. After the tenth day the interval of feeding is increased to two hours.

The great difficulty with the Lenhartz diet is what might be expected from any such cut and dried, prearranged plan of feeding. Too many eggs, too early allowance of meat, are some of the most common complaints against it. In short, as a guide to the physician, the plan serves a useful enough purpose, as a rigid rule of procedure for each individual patient it is doomed to a very restricted field unless it undergoes appropriate modification. In actual practice, therefore, the "protein diet" is nowadays a much more loosely outlined plan of feeding based on milk as the chief article of diet. The prominent position held by milk is due not only to its high nutritive qualities, but to the simplicity of its utilization (minimum preparation) and its universal availability. The latter feature is still further increased by the recent advent of excellent milk powders, which (as for example in the case of the commercial "Klim") furnish perfectly satisfactory milk by simple admixture with water.

In many patients it is impossible to begin feeding with so rich a combination as milk and eggs. Recent hemorrhage, anorexia, nausea, prostration, hour-glass contraction may indeed demand rapid building up, but the beginning must be made with the very simplest elements of diet. In such cases feeding may be begun with plain milk, one-half to one ounce every hour or every two hours during the day. If even this proves too much the milk may be peptonized. This is readily accomplished by Lockwood's method:

To one pint of milk is added ¼ pint of water, and the mixture is to be divided into two equal parts. Boil one part, and immediately afterward add the other. Stir in the contents of one of Fairchild's peptonizing tubes, and set the bottle in warm water for one and one-quarter hours. Bring rapidly to a boil and keep on ice. The completely peptonized milk should have a slightly bitter but not unpleasant taste.

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As progress is made, the dose given at each feed is increased and the interval between meals is lengthened, so that at the end of the first week in favorable cases the invalid is taking 6 to 8 ounces at a time every three hours. Every effort should be made to feed as much as possible and yet to avoid at all costs nausea, vomiting, and increased distress.

In patients who take their food well, on the other hand, the caloric value of the diet can be greatly increased from the beginning, as Held and Gross have pointed out, by the addition of sweet cream to some, if not to all, of the feedings. Ice cream, too, has been recommended (Da Costa) as an ulcer diet, and when properly prepared it should make an ideal food for the purpose. It is important that no corn starch or other thickening be used in the mixture, and that the amount of sweetening be greatly reduced from the proportions ordinarily included.

In these more robust individuals fairly rapid progress can be made. During the second week the diet is enlarged by the addition of well cooked and strained cereals, soft boiled eggs, butter, toast and Uneeda biscuits soaked in milk. If there is an aversion to warm butter, fairly large amounts may be well borne if the butter is first thoroughly frozen in the ice-box and then chopped into small pieces which are allowed to melt in the mouth. At the beginning of the third week scraped or minced lamb or chicken or small pieces of boiled fish may be given; also thoroughly mashed vegetables, such as potatoes, peas, asparagus tips or cauliflower. A safe rule to follow is that only one new article be given at a time. It is during the third week that milk is discarded as the chief article of diet. In may thenceforth be given between the heavier meals representing the ultimate breakfast, dinner and supper.

During the third or fourth week, depending on his strength and general condition, the patient is allowed out of bed, but should rest consistently after the three chief meals of the day. He may now be put on a convalescent ulcer diet as follows:

CONVALESCENT ULCER DIET

(Vanderbilt Clinic Diet Lists)

Breakfast

Boiled milk with cocoa or coffee.
Any cooked cereal, strained, with cream.
Dry toast, buttered.
One egg, soft boiled or poached.

Ten a.m.

Glass of milk, or malted milk, or milk with beaten egg.

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Lunch.

Thick potato, pea, or bean soup with toast soaked in it; or boiled rice with milk or cream.

Two soft boiled, scrambled or poached eggs.

Four p.m.

Bouillon with rice, or chicken broth and toast or dry crackers.

Supper

Minced chicken or rare scraped beef, or inside of chop or fish.

Mashed or well baked potatoes.

Buttered toast.

Junket or custard, or wine or coffee jelly, or tapioca pudding.

Ten p.m.

As at ten a.m.

General Directions

1. Take your meals precisely on time.
2. Chew your food extremely carefully.
3. Eat and drink very slowly.
4. In preparing food, use no spices and as little salt as possible
5. Eat and drink nothing besides articles given on this list except water.

The Sippy Diet.—This is a specific method of feeding devised for the prevention of acid corrosion by the absolute control of free hydrochloric acidity. The patient is put to bed for approximately three weeks. He may then be allowed to sit up a portion of each day and take short walks. In the absence of serious complications the patient is able to do some or all of his work at the end of four or five weeks. There is no period of preliminary starvation. An ordinary citrate of magnesia bottle filled with equal parts of milk and cream and kept in a pitcher of ice water at the bedside, with the powders, a measuring glass and a timepiece constitute the paraphernalia of treatment. Three ounces of the milk and cream mixture are given every hour from seven a.m. to seven p.m. After a few days a soft egg with cracker or bread and butter may be added to one of the forenoon feedings, and three ounces of a cereal such as well cooked rice, oatmeal or farina may be added to one of the afternoon feedings. The cereal is measured after it is prepared. Eggs and cereal are gradually added until at the end of the first week the patient is usually taking each day three ounces of the milk and cream mixture every hour, and in addition two or three soft eggs, one at a time, and 6 to 9 ounces of a cereal, three ounces at a feeding. The cereal and eggs are given at alternate feedings. From this

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point on custards, cream soups, vegetable purees and other soft foods may be substituted now and then for the milk and cream feeds.

In simple cases of ulcer, i.e., those uncomplicated by food stagnation or excess secretion, the free acidity is usually controlled by feeding every hour as described, and by giving midway between feedings a powder containing 10 grains each of heavy calcined magnesia and sodium bicarbonate, alternating with a powder containing 10 grains of calcium carbonate and 30 grains of sodium bicarbonate. In addition, the powders should be given every half hour after the last feeding for four or five doses, or until the stomach contains no food as determined by the occasional use of the stomach tube. If diarrhea develops the calcium carbonate and soda powders should be substituted for the magnesia and soda powders a sufficient number of times during the day to control this troublesome symptom. Routine aspirations to determine whether free HCl is controlled should be performed at least on two afternoons and three evenings of each week while the patient is under accurate observation. The evening aspiration should be made one-half hour after the last powder is taken, i.e., at about 9:30 p.m.

At the beginning of the fourth week the patient is placed under practically the same management as is to be followed during the remainder of his treatment. The routine is now changed to three small meals daily (breakfast, dinner and supper), with milk and cream at hourly intervals, alternating with the powders. The total bulk of food allowed at any one meal should not exceed ten or fifteen ounces (measured after being prepared). After the fourth week a small amount of meat may be taken. Potatoes, cooked fruits (later raw fruit) and ordinary desserts may be added to the diet. It is found that patients can continue this treatment, with occasional intermissions, while at home or at work even for months after the ulcer is healed. Sippy recommends that the "accurate management," as outlined, be continued for at least one year.

Duodenal Feeding.—By means of the duodenal tube nourishment can be introduced deep into the duodenum well beyond the usual site of gastric or duodenal ulceration. In this way the diseased parts are entirely spared the task of food digestion and even of food reception. Unfortunately many persons are unable to accommodate themselves to the constant presence of a tube in the mouth and pharynx. The method is thus limited in its applicability to those who are or who can be readily tube-broken.

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Another, perhaps more theoretical disadvantage, is that the tube itself may act as a gastroduodenal irritant and cause an increase in peristalsis despite the exclusion of food from these parts.

The tube is introduced simply by having the patient swallow the bucket or tip. The act of deglutition is much more easily performed when the head is held forward than when it is thrown back. Of the many types of tips on the market that of Jutte, being the smallest, is the easiest to swallow. The wire stylet may be employed to aid the introduction, though this is not often necessary. After the tip passes into the esophagus the tube is rapidly swallowed (with the aid of a little water if desired) for a distance of about 50 cm., which corresponds to the first mark on the tube as usually supplied by the manufacturers. This brings the tip well within the stomach. The patient then lies down on his right side, thus assisting by gravity the penetration of the pylorus, and very gradually swallows ten or twenty cm. more of tubing. From now on tests should be made to determine the exact position of the tip of the tube. The surest means of establishing this is of course direct fluoroscopic observation. With a good Roentgen apparatus both tip and tube can be made out without the addition of contrast substance. Where no fluoroscope is available the tests already enumerated in the first section should be employed to decide whether the tip is in or out of the stomach. After the pylorus is penetrated the tube should be swallowed for another few centimeters until a total of 75 cm. or more is introduced. This distance generally brings the tip well within the second or third portion of the duodenum. Not until this position is definitely established should feeding be commenced.

At this point a word may be in order as to the time required for the penetration of the pylorus. In the first place it must be recognized that where pyloric obstruction exists, or even a high grade of pyloric spasm, the tip may never succeed in passing into the duodenum. However, even where there is no such interference at the pylorus the time of passage varies within the widest limits. In some individuals the tube may go through within 10 or 15 minutes. In others, or in the same individuals at other times, the tube may not go through for many hours. It may even be necessary to leave the tube in over night before success is achieved in such cases.

The plan of duodenal feeding recommended by Einhorn calls for a meal of 7 oz. (one glass) of milk, one raw egg, one tablespoonful of sugar, given every two hours during the day from

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7 a.m. to 9 p.m. The mixture should be well beaten, strained, and administered slowly at body temperature. It may be injected with an ordinary glass (Luer) syringe, or allowed to flow in from a constant temperature reservoir such as that recently devised by Buckstein. After each feeding the tube should be thoroughly cleared by injecting about 10 c.c. of water, followed by a syringeful of air. The pet-cock at the mouth end of the tube should then be closed to prevent regurgitation. These details should never be neglected, as a milk curd may form within the tube and completely obstruct it. Tube feeding may be continued in this manner for two or three weeks to such advantage that the patient may show a gain in weight at the end of this period.

Ambulatory Treatment.—It has already been shown that in certain types of cases ambulatory treatment may be justifiable. The best results are undoubtedly secured in robust individuals whose symptoms are relatively mild—being those previously described as characteristic of gastric irritation—and which practically disappear as soon as the diet is regulated.

For the first two weeks of treatment such individuals should restrict their daily activities to the minimum. They should lie down after meals and should retire early, say at 8 or 9 p.m. Feeding should be begun with a pint of milk and two eggs four times a day: at 8 a.m., 12 noon, 4 and 8 p.m. As the caloric value of this diet (generally less than 2000 C. per day) is insufficient to maintain body weight in an up patient, it should be supplemented after a day or two by the addition of cream and lactose to the above feedings. As soon as possible the six meals a day plan should be adopted as already outlined under the convalescent ulcer diet. The diet may then be gradually changed to the standard bland diet, as in the plans of feeding previously outlined. Medication such as that described for the treatment of gastric irritation is generally satisfactory for the control of such symptoms as do not yield to the dietetic treatment alone.

Treatment of Special Conditions and Complications.—a. Hemorrhage. Hemorrhage in ulcer may be evidenced by vomiting of blood (hematemesis) or by the passage of dark stools (melena). Immediate and absolute bed rest is the first essential in treatment. An ice bag, or better still, an "ice coil" should be applied to the abdomen with the double purpose of contracting the bleeding vessel by the application of cold and of keeping the patient quiet by virtue of his subconscious fear of displacing the apparatus. The tendency to syncope may be overcome by raising the foot of the bed. Apprehension and restlessness are best con-

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trolled by an injection of morphine. In order not to provoke or increase nausea or vomiting all food should be withheld for 12 to 24 hours, or as much longer as may be necessary. Where a prolonged fast seems indicated fluids may be given per rectum, as already described. To allay thirst the patient may be allowed to suck small pieces of ice from time to time.

Fortunately in the majority of cases the actual hemorrhage stops spontaneously within a few hours. If the bleeding should persist despite the above-mentioned efforts to check it, gastric lavage with ice water should be practiced. The object of this maneuver is to empty the stomach of blood clots so that it can contract down on the bleeding point in the same way that the distended uterus contracts down after the expulsion of the placenta. If lavage also is unsuccessful, preparations should be made for immediate blood transfusion. Nowadays this may be readily accomplished and should never be delayed too long.

Operative interference has little to offer in the way of controlling gastric or duodenal hemorrhage. If for any reason operation should be decided upon, it should always be preceded by transfusion.

In the case of marked bleeding into the intestine, uncomfortable distention and constipation not infrequently follow the early dark stools and the opiate injection. In such cases an enema is generally followed by prompt relief of the discomfort.

b. Pyloric obstruction. When the condition of pyloric obstruction, or better, delayed gastric emptying, complicates an active gastric or duodenal ulcer, it is due either (1) to inflammatory swelling of the tissues about an ulcer located at or near the pylorus, or (2) to a spasm of this part of the stomach, or (3) less commonly to a localized peritonitis. This condition is to be distinguished from a chronic pyloric obstruction due to organic narrowing of the pyloric ring by scar tissue resulting from the *healing* of an ulcer at or near the pylorus.

The principles underlying the treatment of an active obstructing ulcer (the type first mentioned) have been set forth by Sippy as follows:

1. The ulcer itself is to be treated by the plan of "accurate management" already outlined (see "Sippy Diet").

2. Since acid corrosion is greatly increased owing to the prolonged retention of irritating gastric contents, an increased amount of akali is required for its control.

3. Excessive night secretion, being the rule, should be con-

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trolled by regular and repeated aspirations of the stomach after the last feeding of the day.

4. The emptying time of the stomach should be repeatedly determined by the employment of motor meals.

The details of the treatment are of importance. The amount of alkali is increased in the powders given between feedings and after the last meal of the day. The aspiration at 9:30 p.m. of the first day should be followed by an 11:30 or midnight aspiration. If 100 c.c. or more of strongly acid gastric juice are found, a continued secretion exists. A powder should be given the next evening immediately after the 9:30 aspiration, and every half hour thereafter until the stomach is again aspirated at 11:30 or midnight.

In many cases, after a week of this treatment the stomach will be found to contain no more than 15 or 20 c.c. of secretion. This quantity being normal no further late aspirations are required. From this point on the stomach should be evacuated every night one-half hour after the last powder is given, i.e., at 9:30 p.m. If no free acid is present at that aspiration and no food remains, the free acidity and emptying time may be assumed to be controlled during the entire day.

In those cases where the pyloric obstruction is more marked it may be necessary to continue the powders after the 9:30 aspiration and to aspirate at 11:30 for two or three weeks before success is achieved. About two weeks after the beginning of this plan of management an ordinary Leube (7 hour) motor meal may be given in order to determine how much has been accomplished in the way of improving the stomach emptying time. The amount of residue recovered at the end of the seven hours is compared with the amount similarly obtained prior to treatment.

According to Sippy, approximately 85 per cent. of all cases of pyloric obstruction due to ulcer disappear within the first three weeks under the management advocated above. If the stomach does not completely empty itself within normal limits after three weeks of such treatment the obstruction is due to the formation of a cicatrix which can generally be relieved only by gastro-enterostomy. The possibility of cancer being present should also be borne in mind, because it is in just these circumstances that early surgical intervention gives practically the only chances of cure. The persistence of blood in the stools for a period exceeding two weeks of careful feeding should always arouse the suspicion of malignancy. In such cases an x-ray examination,

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repeated at intervals if necessary, may help decide the nature of the obstruction.

c. Perforation. The possibility of gastric or duodenal perforation should never be lost sight of, as prompt action may be necessary in order to avoid disaster. Where the rupture is small ("pinpoint") it may close off quickly or become well localized and take care of itself without surgical intervention. In such cases patients have recovered under medical treatment consisting of the administration of an opiate, absolute bed rest with cold applications to the abdomen, and the withdrawal of mouth feeding for at least two or three days. When perforation is suspected the patient should be put at once under the most scrupulous observation with special reference to the spread of abdominal tenderness, rigidity and distention, changes in the rate and character of the pulse, and the development of shock. In every case a surgeon should be brought into consultation at the earliest possible moment after the condition is suspected.

Surgical Treatment of Ulcer.—There can be no question that in certain complications of ulcer such as organic pyloric obstruction and perforation surgical treatment is strictly indicated. Where such complications do not exist, however, the indications for operative intervention are by no means so clear. In this connection it must be borne in mind that every surgical procedure carries, in addition to its immediate operative mortality (which differs greatly according to the individual surgeon), the danger of developing some malfunction or disability from the operation itself (adhesions, malfunction of gastroenterostomy, gastrojejunal ulcer, etc.). To be sure, cures have been reported from each of the various interventions advocated—gastroenterostomy, excision of the ulcer-bearing area, and even gastrectomy—but it is doubtful whether the results obtained have been on the whole any more satisfactory than those following any of the methods of conservative medical treatment when thoroughly and conscientiously carried out.

On the whole, therefore, it seems best to prefer medical treatment as a routine procedure, and to resort to surgery only in the presence of such complications as those mentioned above or in atypical or unusually rebellious cases.

44 W. 96th St., New York.

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THE ART OF LOVE

To the Editor.—It is surely to be regretted that Dr. James W. Walker (M. L. July) adopted such an unprofessional style of criticising my article on "Eroticism in Women" (M. L. April), especially as from his remarks it would seem that either he had not fully read my article, or, had he done so, he had entirely failed to appreciate its drift.

To begin with, of the fact mentioned by Dr. Walker that fully 90 per cent. of divorces grow out of female frigidity I am as fully aware as himself, but I would not express that fact as he has done, because as so phrased it gives an inaccurate representation of the fact mentioned. It is not female sexual frigidity that causes 90 per cent. of divorces, but the failure on the part of husbands to accommodate themselves to a wonderful provision of nature. The normal woman is not sexually frigid, this undoubted appearance resulting from the different manner in which, as compared with men, women experience sexual pleasure. Women are much slower than men in completing the act of sexual congress, a result chiefly owing to "the comparative insentitiveness of the genital canal," as Havelock Ellis remarks. To this sexual anesthesia I had three times referred in my article (pp. 181, 182, 184), though this fact seems to have escaped the notice of Dr. Walker.

Far from my viewing it as "unimportant," as he seems to think, my article was chiefly written to emphasize this fact, and to propose a desirable, in place of an undesirable, method of meeting it. In so doing I showed that the normal woman was sexually frigid only in the particular physical center named, since psychically she is much more sexually inclined than man, history manifesting this fact so abundantly that men have erroneously assumed that women more desire sexual congress than men, the actual fact being the other way.

It is, as I claimed, psycho-sexual pleasure that women chiefly desire, as against the physico-sexual pleasure chiefly desired by men. I warned, however, against the impression likely to be taken that I viewed women as neither experiencing nor desiring any physico-sexual pleasure. On the contrary, most of them so

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desire and are capable of so experiencing, but as the outcome of a secondary and not a primary impulse, as in the case of men.

Havelock Ellis correctly remarks that there is "a tendency in woman to allow the maternity feeling to take the place of sexual feeling." This is true, which is the reason for his further remark that many women never know, and he might have added, never desire, any further sexual pleasure than they experience from the suckling of their babies. It is this tendency, with the intense psycho-sexual pleasure that it gives to women, that causes the wife very often to desire to pillow her husband's head on her breast. This and many other love tokens on the part of the wife most husbands miss, owing to their ignorance of, and, frequently, as regards the woman, indifference to, the "Art of Love."

Be this as it may, from the evidence produced showing woman's greater psycho-sexual than physico-sexual pleasure as compared with man, I drew the inspiring conclusion that woman by an evolutionary process of nature has actually become "the Angel in the house," whose chief duty and delight is to spiritualize the act of sexual union. If not directly said this was distinctly implied in the entire drift of my article on "Eroticism in Women," and surely Dr. Walker, with the thought of his mother, or his wife, or of his daughter ever in mind should have welcomed instead of adversely criticising such an article.

ARTHUR E. WHATHAM.

1410 S. Floyd St., Louisville, Ky.

ON BOARD THE AQUITANIA

To the Editor: Several times during the past month or two I had meant to write to you, but each time for one or another reason failed to do so. Now, however, I find I have both the will and the required energy, and save for some little dullness due to bromides taken for seasickness I am all set.

I received the last two issues of MEDICAL LIFE some weeks ago. I glanced through them and noticed the changes brought about both in form and content. Now I have had the opportunity to go through them more carefully and to notice more minutely just what those changes amounted to. In some respects I feel that the changes are quite an addition, in other respects I am not so sure.

Thus, for example, I am happy to see the volume of material in the issue increased. One can still go through the issue in about an hour's reading, but it is much better than that phthisical little

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pamphlet that reached me at first. But then that array of proposed contributors frightens me. I am afraid, and I sincerely hope that my fears are unfounded, that the pages of our journal will become filled with precisely the same type of material that fills the pages of so many other medical journals.

It seems to me that the guiding principle for your journal should be to produce only such material relative to the practical phase of our art as will not be given a hearing nor space in the columns of the other medical magazines. It is the biographic, the philosophical, and the cultural of our art and science that should fill the columns of MEDICAL LIFE.

There is a good deal in the social relations of patient and doctor, or wider still, of the community and the doctor that needs to be treated of. There is further still the matter of industry and the doctor, the worker's health and the doctor, and I am sure a score or more of such related subjects that merit inclusion in your paper. Why not give yourself up to those, instead as you have done in the last issue, to the consideration of the therapeutics of diseases? After all, I can pick up any journal on medicine and find there discussions enough on those topics of body ailment—but where will I find the other topics I mentioned?

IAGO GALDSTON, M.D.

Infant Mortality

To the Editor: The American Child Hygiene Association, which has done a great deal to awake the interest of the medical profession in infant and child welfare work, has performed a good act in publishing a statistical report of infant mortality in the United States during the year of 1920. The report is based on figures obtained from health officers or registrars of vital statistics in 519 cities. Unfortunately some health officers refused to supply the necessary data pertaining to their cities. The report, however, is adequate enough to give the student of child hygiene a bird's-eye view of infant mortality in this country.

A glance at the statistics shows that the highest infant mortality occurred in cities of the following three types:

1. Small town.
2. Poor town.
3. Town containing foundling houses.

New York City, the largest in this country, had a death rate of 85, compared to Dunmore, Pa., having a death rate of 225.

Nearly all small cities with a high death rate are either

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inhabited by poor people or have some institution where foundlings are brought in, who increase the death rate.

These facts go to show several important points in connection with health and sanitation.

1. It is no more true that the larger the city, the poorer the health of the population. On the other hand, the larger the city, the lower the death rate. This, of course, can be easily explained on the ground of better health organizations, better workers, and greater interest in health work.

2. Economic conditions play a great rôle in the preservation of the life of children. Many of the towns with a high infant mortality are inhabited by working people who cannot afford to give their children the proper care, the proper food, or call a doctor at the earliest possible time.

3. Institutions housing many babies have a high mortality. This fact has been brought out by a number of observers and is corroborated by the statistical report in question. Lackawanna, N. Y., a town having a large institution receiving foundlings and dependent infants from half of the state of New York, has the highest infant mortality of any city in this country (274.) This is obviously due to the institution, as exclusive of the institution the death rate in that city is only 115. Why institutions have a high infant mortality cannot be discussed here. Suffice it to say, that institutions for children are at best only a necessary evil.

4. A great deal of work has to be done in this country toward the reduction of infant mortality. Better methods of feeding, advanced methods of sanitation have in many places reduced infant mortality 50 or 60 per cent. There is no reason why every baby brought into this world should not get the benefit of our advanced knowledge.

CADUCEUS.

Chicago, Ill.

THE MALPIGHI ESSAY

To the Editor: I am congratulating you on the interesting article, which appeared in the June number, on Marcello Malpighi. In brief and condensed form you give a splendid idea of the great Italian, who did so much for the progress of the medical sciences. Bravo!

A. RAVOGLI, M.D.

5 Garfield Place, Cincinnati, O.

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SECTION ON

HISTORICAL MEDICINE

An acquaintance with the history of his science is, however, especially indispensable to the practical physician, if he would thoroughly comprehend and penetrate the secrets of his profession. To him, indeed, it is the bright and polar star, since undoubtedly it alone can teach him the principles of a medical practice independent of the currents, the faith and the superstition of the present. Moreover, it offers him as scientific gain, through the knowledge of the past, the measure for a just and well-founded criticism of the doings of his own time, places in his hand the thread by which he unites past conditions and efforts with those of the present, and sets before him the mirror in which he may observe and compare the past and present, in order to draw therefrom well-grounded conclusions for the future.

J. H. Baas.

1921 SEPTEMBER 22 Pages

THE REVIVAL OF HIPPOCRATISM AND RENEWAL OF HUMORAL PATHOLOGY

By Max Neuburger, M.D.

PROFESSOR OF MEDICAL HISTORY, UNIVERSITY OF VIENNA.

About the middle of the 19th century, the total separation of the new from the old medical science seemed to be accomplished. The new science had the sensation of being one of nature, in contrast to rude empiricism, speculation, and romance of the past. Equipped with the aids of physical diagnosis, pathologic anatomy, microscopy, chemical laboratory, and animal experiment, all was swept away that had come down through the centuries in the literature of medical experience, and medical ideas.

All seemed overturned and radically transformed. There were almost none but anatomical pathological conceptions. The doctrine of the seat of disease in the organs, in the tissues, and in the cells, scarcely found a hidden corner for "universal affections and constitutional diseases" which had played a chief part in the previous system. The therapy was transitory, and almost excepting surgery, reduced to zero. The greatest part of the medicinal store collected by the empiricism of the past was discarded as "uncritical," contradictory to exact principles of research, and as entirely worthless, without, to be sure, being able, at first, to find a substitute therefor.

Surprising as was the measure in which the knowledge about

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the nature of pathological changes grew, actual medical practice—therapy, in the narrower sense of the word—had suffered a severe loss so far as purely local treatment came into consideration, for instance, of eye, ear, nose, throat and skin affections.

Very hesitatingly, but finally, driven by the need of the day, the way was found back to the true purpose of medical science—cure. It was begun by slowly reconstructing the therapy of internal diseases. But scientific endeavors by no means remained unsatisfied. Chemistry and physiologic experimental research paved the way to the discovery of new curative substances and the testing of their action. It was reserved for the clinic to give decisive judgment as to their employment in medical practice.

The series was opened by remedies to induce sleep, to soothe pain, and to combat fever. These were later followed by such as had the purpose to remove functional disturbances. Gradually, not a few of the older remedies, heretofore discarded as "unscientific," were, after renewed testing, in the laboratory and the clinic, again introduced. In the meanwhile, the recognition of diseases was enormously facilitated by means of bacteriology, which, together with antisepsis, founded a new era of surgery. Like almost every great step of progress, bacteriology had, at first, many instructive mistakes in its career, among others, the fact that under its influence exclusive attention was given to outward factors in the origin of the disease, and endogenous factors such as disposition and individual peculiarities, were almost wholly ignored.

But extremes meet; just at the time when modern therapy, culminating in the "anatomic idea," in local therapy and in bacteriology, appeared most remote from the old therapy, the return was begun during the concluding decades of the past century. It came to the re-awakening, to the renewal of Hippocratism.

True, even in the period of the total discarding of old medical science, in the age of the so-called "therapeutic nihilism," it had not succeeded in entirely cutting itself loose from the "Father of Therapy," Hippocrates. Yes, the venerable master of the fifth century before Christ was gladly called upon as authority. For had he not made the rejection of all natural philosophic speculations, the sober observance of the sick-bed, and an expectant treatment of the affection with least possible interference in its natural course, the leading doctrine of his school? But the positive part of Hippocratism, namely, treatment of the whole individual, not only of the disease of the affected organ, had remained unregarded for the most part.

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With sole consideration of local therapy, scarcely any attention was given to dietary conditions, climatic influences, etc.; and the application of the physical curative powers (light, air, water, dietetics, massage, and gymnastics) were left almost entirely to empirics.

It was chiefly the nervous affections and tuberculosis which, in the last decades of the nineteenth century, gave the impetus for a return to the principles of the individualizing therapy of Hippocrates, and the renewal of ancient therapeutic ideas.

Proceeding from hydropathy, and diet for invalids, a beginning was made in the practice of dietetic physical therapy in all its branches, in order to give it a scientific basis ,and to perfect it systematically. At present, the field has become very large in which cures by means of hydropathy, baths, drinking, fattening, flesh reducing, and metabolism are applied, similarly massage and gymnastics, change of climate, sun, and artificial light. Yes, modern medicine could as little dispense with these eminently important curative agents as with medicinal therapy.

Widespread and rational as modern practice may be, greatly as the technique of manipulation has developed, modern dietetic-physical therapy only signifies a *renewal of ancient therapeutic ideas,* a point of contrast with the practice of long ago.

A rapid survey of the writings of Hippocrates, of which some even treat the matter in a specializing way, suffices to prove that the Greek physicians, as early as half a millenium before Christ, made the regulation of mode of life, the correct determination of the requisite amount of food, and its relation to assimilation and dietetic therapy, the broad basis of their treatment.

In these ancient medical books, it is discussed with admirable skill and exemplary care, what kind of treatment is suitable in acute febrile diseases, due consideration being given to individual conditions and stage of disease; further, how the diet should be regulated as to quality and quantity in chronic ailments. For chronic affections, the disciples of Hippocrates, moreover, prescribed walking, physical exercises, bodily work (for instance, sawing of wood), baths, massage, loud talking, singing, etc.

All this, however, not conventionally, but individually graded; it was endeavored to produce increase of weight by at first ordering marches, increased day by day with gradual diminution of food, followed by increase of food, and simultaneous reduction of exercise.

It was a very important rule that in prescribing a mode of

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life, caution should be the guide, all exaggeration being avoided, and customary habits not too quickly changed. Steam-baths, sun-baths, and sand-baths were ordered from similar points of view as at present.

Following the traditions of the school of Alexandria, Asklepiades, in the first century before Christ, transplanted the dietetic-physical therapy to Rome, where it became very popular. He prescribed an exact diet for each affection, prohibited meat in certain ailments, and knew the so-called "Dry" diet, which he recommended, for instance, in dropsy.

Among his prescriptions, regulated in all details, there were active and passive exercises, gymnastics, massage (gentle rubbings with oil), cold washing, cold and warm baths, perspiration baths, douches, rocking baths, etc.

What Asklepiades began was later continued by medical sects in Rome during the time of the Empire. Thus, with the "Methodists," the end and aim of all doctrinal systems were: metabolism, cures, water, sand, oil, perspiration, mineral and herb baths; cold water cures, massage, exercise therapy, climate therapy, as also hygienic measures in regard to dwelling, clothing, bed in condition of health and sickness.

Galenos, also, the most famous physician of antiquity, paid great attention to diet and physical curative agents; although he was greatly interested in medicinal remedies, he gave detailed prescriptions, guided by his own experience, and that of others. He utilized the influence of air and light, of cold and heat, as curative factors. He made use of massage regulated with great subtleness, of baths of all kinds, and of climate therapy which he raised to a mountain-air therapy, combined in pulmonary tuberculosis with a milk cure.

Galen wrote a treatise on dietetics in the most thorough way, and his paper on a diet for thinning the humors is a downright model.

As before mentioned, the tendency became prominent of treating not only the affected organ, but the entire individual in order to favorably influence his strength and appetite—the fundamental principle of Hippocrates. But herein a strictly localized contemplation was still favored: the body cell alone was recognized as the real site of all affections in the first place, and the seat of all disease. The blood was merely intended to be the means of preventing the spread of pathological processes. General affections were disputed. The opposite view, which in old medical science had the lead, namely, that the blood constituted

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the seat of many diseases, and caused pathological processes in the organs in a secondary way, Humoral Pathology, Hæmato-Pathology, seemed to be done away with for all time.

Rokitansky's crasia doctrine was completely deposed by Virchow's cellular pathology. And yet, at the close of the past century, a neogalenism dared to raise its head; a new kind of conditional humoral pathology, propagated by no less a man than Behring.

To this revival of an ancient pathological theory—with essential changes, to be sure, and very considerable limitations—those acquisitions of research led, which brought about an wholly unexpected insight into the workshop of the organism, and made the blood serum the central point of scientific interest. For it proved that the blood serum, which had formerly been scarcely noticed, as it showed no form elements under the microscope, constituted the assembling place of the protective substances, of the antidotes and the defensive ferments against bacteria; bacterial poisons as well as all kinds of substances foreign to the body, on which natural immunity and the effect of the serum therapy are based.

Another function of the blood was revealed, moreover, by the discovery of *Internal Secretion* according to which the substances of certain glands are imparted to the blood, in order to convey them to the cells as important regulators of their vital functions. True, research in the field of the blood doctrine is still under way, most of the questions are still open, but the presentiments which the ancients entertained of the importance of the blood and its composition, for the origin, the course, and the close of the affections, have been more than justified.

Thus, in the spiral course of development, the old and the new clasp hands in unity, and particularly in the history of science, the words of Seneca:

"Multa renascentur quae jam cecidere"

always come true. Much is once more honored that seemed to have been overcome for all time.

Vienna, Austria.

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RENE THEOPHILE HYACINTHE LAENNEC[1]

(1781-1826)

By Victor Robinson, M.D.

The immense importance of auscultation was at length demonstrated to the world by Laennec, who, after spending three years in the investigation of its phenomena, published those results which have made his name immortal.— JOSEPH SKODA.

The result of Laennec's discovery was an entire revolution in the knowledge of diseases of the chest; but it would be a mistake to forget that an essential factor in this revolution was the simultaneous study of the condition of the diseased organs as seen after death. Without the latter, it is difficult to see how the information conveyed by sounds could ever have been verified. This increase of knowledge is therefore due, not to auscultation alone, but to auscultation combined with morbid anatomy. In the case of Laennec himself this qualification takes nothing from his fame, for he studied so minutely the relations of post-mortem appearances to symptoms during life that, had he not discovered auscultation, his researches in morbid anatomy would have made him famous.— JOSEPH F. PAYNE

Leopold Auenbrugger was no fool; he had read history, and he knew the usual fate of the innovator: the contumelious stone during life, and a monument after death. Therefore, when sending his *Inventum Novum* out into the world he wrote this little preface:

I present to the reader a new sign for the detection of diseases of the chest, which I have discovered. It consists in the percussion of the human thorax and the determination of the internal condition of this cavity by the varying resonance of the sounds thus produced. My discoveries in this subject are not committed to paper because of an itch for writing, nor an inordinate desire for theorizing. Seven years of observaton have put the subject in order and have clarified it for myself and now I feel that it should be published.

I foresee very well that I shall encounter no little opposition to my views, and I put my invention before the public with that anticipation. I realize, however, that envy and blame, and even hatred and calumny have never failed to come to men who have illumined art or science by discoveries or have added to their perfection. I expect to have to submit to this danger myself, but I think that no one will be able to call any of my observations to account. I have written only what I have myself learned by personal observation over and over again, and what my senses have taught me during long hours of toil. I have never permitted myself to add or subtract anything from my observations because of the seductions of preconceived theory.

I would not wish, however, that anyone should think that this method of diagnosis, which I suggest, has been developed to its utmost perfection. I confess with all candor that there are defects which conscientious observation will, I hope, amend with time. It is

[1] The sketch of Laennec appeared originally in the Medical Review of Reviews, July, 1912; it is chapter xi of Pathfinders in Medicine. The present revised version supersedes the previous versions.

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possible that there are even other important truths for the recognition of disease still hidden from this method of diagnosis. Some of these may prove of great usefulness for the differentiation, prognosis and cure of diseases of the chest.

This was the reason why in my personal experience, after I had succeeded in finding the signs in the chest and proceeded further to the investigation of their causes so far as my own observation could help me, I have always afterward had recourse to the commentaries of the most illustrious Baron Van Swieten, since I have considered that whatever can be desired by an observant man is sure to be found in his work. I have thus been able to spare you a long disquisition. I have found in his work a sure basis of knowledge on which my slight superstructure may be raised up to view.

I do not doubt, however, that I have accomplished a work which will earn the gratitude of all true devotees of the art of medicine, since I have succeeded in making clear certain things which shed not a little light on our knowledge of the obscure diseases of the chest, a subject hitherto very imperfectly understood.

I have omitted many things that seem doubtful because they are as yet not sufficiently elaborated. I shall endeavor, however, faithfully to devote myself to the further development of these points. Finally, it has not been my effort to write in any elegant diction. I have chosen a style in which I may be thoroughly understood.

It will be noticed that in this foreword Auenbrugger refers to his teacher, and throughout the monograph the name of Van Swieten is mentioned with the greatest respect. Van Swieten certainly had merits as a medical man. When he was called over from Holland the Austrian throne had no heir; but Van Swieten drew the husband aside, gave him some private instruction, with the result that Maria Theresa became pregnant sixteen times. Van Swieten spent most of his life writing eight huge volumes of commentaries on the aphorisms of his master, Boerhaave, and though some say that the commentaries are more valuable than the aphorisms, neither one nor the other is now read. Van Swieten wrote much on the diseases of the chest, but he did not mention percussion. The eminent doctor saw no use in tapping the thorax. He did not know that his pupil's finger had ushered in the era of modern diagnosis.

Gerhard van Swieten's successor, the unpleasant Anton de Haen, left eighteen volumes behind him, including a treatise in defense of witchcraft. The historical student who digs among these paper ruins will find the author complaining that it is almost impossible to recognize thoracic diseases until it is too late to help the patient. The obstinate man did not see that in response to the physician's rapping the door of thoracic knowledge opened.

But Auenbrugger had anticipated neglect, and he was too

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well poised to permit himself to be embittered or become exasperated. He devoted himself to practice, made money, went to the opera in winter, cultivated a garden in summer, wrote a libreto for the amusement of the empress, kissed his beautiful wife every day, and lived to celebrate his golden wedding.

While Auenbruger was growing old in Vienna, a child was growing up in Brittany. He was sickly-born, the offspring of a tuberculous mother. One day, when the child was six years old, the neighbors came in and looked at him sympathetically, and the women patted him kindly on the shoulders, for his mother was dead. His father was a lawyer, but the versatile advocate wrote poetry like Desforges-Maillard, and was too busy in other respects to be bothered by a frail orphan. He brought the boy to his grand-uncle, an Abbé at Elliant.

The uncle saw the child was obedient, and decided there would be another priest in the family. From him René Théophile Hyacinthe Laennec received considerable misinformation which he never forgot. The child was well treated, and it seemed as if his existence would be eventless—he would quietly pass from his uncle's district to a parish of his own. For what can happen in Brittany? It is the land of the past, the province of the dead. In La Bretagne only the cock and the artist welcome the rising sun. To study a Breton peasant is like turning over a well-preserved, half-animated fossil. His skull is thick enough to resist the advances of French civilization. He will not even speak French, but still whines out his barbarous *patois*, for he is convinced it is the language Adam and Eve spoke in Paradise.

The Breton folk are as unchangeable as the Druidical dolmens and menhirs which litter their country. They are victims of the *idée fixe;* in politics and religion a new thought will never filter through Brittany. In a thousand, or in five thousand years, when the present theology disappears with its predecessors, the last Christian will be a Breton peasant.

The Bretons have never had any interest in the rest of the world, but outsiders have printed and painted the name of Brittany with praise. This is because Brittany is visited chiefly by clergymen who need a rest, and by artists in search of color. The former eulogize Brittany on account of the docility and piety of the inhabitants, and the artists are enchanted because the men wear long hair, broad-brimmed hats, blue blouses, large belts and baggy breeches of sail cloth, and because the women dress in white caps with wide lappets, and, instead of corsets, are arrayed in pretty spencers laced up in front of the waist which open above to allow for the swell of the bosom.

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When Réne Laennec was nine years old strange deeds were done in his quaint and picturesque Brittany; churchmen, including his uncle, were banished. Excited Frenchmen ran along the roadways, crying *Liberté, Egalité, Fraternité,* and pulling down the crucifixes; they had much work to do, for in Brittany wherever two roads meet, there a crucifix is erected. What was happening? Was the world coming to an end? Ah, the world was being saved. It was the great and glorious French Revolution.

From the Reign of Terror issued an ocean of blood, but that scarlet stream watered the tree of liberty; in eternal letters it wrote the Rights of Man; it cast the oligarchs and the theocrats down; it exalted the disinherited of ages; it overthrew a royal carnival of crime hideous beyond belief; everywhere it uttered the glad tidings, *Nous avons changé tout cela.*

As might be expected, the antiquated Bretons fought on the side of the old monarchy against the new republic. It did not matter to them that there was a law in France which gave the nobles permission to shoot at workmen on roofs, merely for the sport of seeing them tumble off. Probably the fact that an aristocrat was not expected to kill more than two toilers during a day's merriment—otherwise labor would grow scarce—made the honest Breton heart pulsate with devotion towards his merciful superiors. As an experiment it might be interesting to attempt to educate the cattle of Brittany—excluding the dullest beast of the field, *la vraie Bretagne bretonnate.*

After the Abbé's proscription the boy was sent home to his father. "Mon Dieu," exclaimed that gentleman, and suddenly remembered that René had another uncle, Dr. Guillaume François Laennec; a pupil of John Hunter, and a professor of medicine and materia medica at the University of Nantes.

For ten years René remained under his guardianship, and here it was settled that he would follow in the footsteps of his medical relative. Then came the desire which in every period stirs all ambitious hearts that beat in provinces: to study in the capital. In the year 1800, at the age of nineteen, Laennec came to Paris.

Within the mesh of Parisian gaiety many a youthful student from the provinces has been lost, but Laennec had come for the college curriculum, and the world of merriment had no meaning for him—although he could dance and write verse and play the flute. He soon became connected with the Journal of Medicine, a periodical which he eventually edited, but which in those days was conducted by Corvisart, Leroux and Boyer.

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Two years after his arrival in the French metropolis young Laennec had a reputation, for in his twenty-first year he gave to medicine its first satisfactory description of peritonitis. Among his other early accomplishments were his minute reports of four hundred cases of disease, and his original accounts of the subdeltoid bursa and the fibrous capsule of the liver. No one seemed to know so much about the tunics of organs as did Laennec.

The passing years still found Laennec in the dissecting-room, and here he found the condition which he designated melanosis, and the post-mortem wart. Laennec's catarrh, Laennec's perles, Laennec's cirrhosis, Laennec's thrombus, and Laennec's rale are some of the monuments he erected along the pathological highway. To him we are indebted for the standard pictures of such diseases as bronchiectasis and esophagitis, and among the permanent additions to our nomenclature are several terms of his devising, such as ægophony and pectoriloquy.

Laennec was a favorite pupil of the great cardiologist, Jean Nicolas Corvisart, who had a mighty name in those days, for he was physician to the demi-god who emerged from the wreck of the French Revolution. Napoleon had a cold in his chest, and was suspicious of the attendants who felt his pulse and looked at his tongue. He was told there was a doctor who diagnosed troubles in the chest by examining that part of the body. "Send him to me," said Napoleon. Corvisart came, and tapped the imperial thorax with his finger-tips. Thereupon Napoleon decided that Corvisart should have the honor of looking after his majesty's health. They grew so intimate that after the birth of the King of Rome Corvisart was audacious enough to lecture the world's chief phenomenon: "Sire, this prince must crown all your wishes! Recall your career: in less than ten years a simple officer of artillery, then captain, general of brigade, general-in-chief, first consul, emperor, spouse of an archduchess of Austria, father of a prince. Having reached so dizzy a height of fortune, rarely attained by any mortal, I beg of your majesty to stop!. Fortune may turn; you may yet fall."

"You speak like a peasant," answered Napoleon.

But we must not forget to ask: Where did Corvisart learn percussion? De Haen's successor was Maximilian Stoll, who had the misfortune to marry the meanest woman on earth, but who was one of the most enlightened members of the Old Vienna School. Stoll praised Auenbrugger's work, and a pupil of Stoll, named Eyerel, wrote a treatise on percussion which came to Corvisart's notice. Later Corvisart came across Auenbrugger's

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Inventum Novum, and decided to translate it. "I know very well," wrote the generous Frenchman, "how little reputation is allotted to translators and commentators, and I might easily have elevated myself to the rank of an author if I had elaborated anew the doctrine of Auenbrugger and published an independent work on percussion. In this way, however, I should have sacrificed the name of Auenbrugger to my own vanity, a thing which I am unwilling to do. It is he, and the beautiful invention which of right belongs to him, that I desire to recall to life."

Before Corvisart percussion was the possession of a handful; after Corvisart percussion became common property. The torch which Auenbrugger kindled Corvisart relit for all futurity. So we see that though the torch of truth often flickers low, yet its immortal light is never wholly quenched. Floods of misunderstanding may roll over it, the weight of authority may threaten it, but throughout the long night it glimmers faithfully, waiting for the truthseeker who will raise it aloft and bring morning to the intellectual world.

Besides Corvisart, Laennec's name is associated with that of Broussais, but in a very different manner. With Corvisart he came into loving contact; with Broussais he was in angry conflict. Laennec had no use for Broussais, and Broussais saw no good in Laennec. Broussais was a master of sarcasm, and Laennec was not backward in bandying scorn. No doubt Broussais was more talented in this respect—he handled words as he had handled a cutlass during his army life—but then he had numerous and various hatreds, while Laennec could concentrate. When he spoke of Broussaisism his voice became cold, and his eyes shot sparks of indignation through his tortoise-rimmed spectacles. What must have added special piquancy to the warfare between Broussais and Laennec was the circumstance that both were Bretons, and of all the people in the world none are so chauvinistic as the folks that hail from Brittany.

Broussais was the medical theorist of the hour, and elaborated a complex system of "physiological medicine," but Corvisart and Laennec accepted only the Hippocratic watchword, Observation. Neither of the contestants was fair to the other, but it must be said that most of Broussais's theories are now as obsolete as his hirudinomania, which was carried to such an extent that within a calendar year it became necessary to import forty-two million leeches into France. At one time there was hardly a French belly which had not given nourishment to these blood-suckers.

His theory of irritation as the cause of disease had great

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vogue in its time, and Oliver Wendell Holmes, who heard Broussais in his latter days, told his Harvard students, "The way in which that knotty-featured, savage old man would bring out the word irritation—with rattling and rolling reduplication of the resonant letter *r*—might have taught a lesson in articulation to Salvini." Broussais spun theories, and obstructed science; he belongs with Stahl and Rasori. Laennec discovered facts and modernized medicine; he belongs with Hunter and Louis.

In 1812, eight years after his graduation, Laennec was appointed physician to the Beaujon Hospital. As conscientious as he was gifted, and willing to work to the point of exhaustion, Laennec became one of the most renowned pathologic anatomists of the nineteenth century. He was particularly interested in the diseases of the chest, and of course employed percussion as he learnt it from Corvisart, but no one yet knew that Laennec was to be Auenbrugger's spiritual heir.

The malady which Laennec studied above others was tuberculosis, the insidious foe which killed the woman who gave him life. Day and night his thin hands grappled with the ancient enemy of the human race. Immemorial indeed, for who shall say in what distant epoch this subtle thief first gained access to the lungs of man? Who knows in what dark and nebulous time a primeval mother first listened in an agony of helplessness to the hacking cough of her infant? We are aghast at the mortality tables of a sanguinary war, but on the white bed of consumption fall more victims than on the red field of battle.

In 1816 Laennec was transferred to the Necker Hospital. During this year a woman who was suffering from heart trouble consulted him. Laennec questioned her, but was puzzled how to proceed with the examination. There was no use in thumping her thorax, for the patient was too stout; neither could he put his ear directly upon her breast, for she was still young. We may argue that physicians have privileges, but Laennec himself claims that immediate auscultation was inadmissible. In his dilemma he happened to recollect a fact in physics. Acting on the idea, he rolled a quire of paper into a kind of cylinder and applied one end of it to the region of the patient's heart and the other to his own ear. This was the first stethoscope. Then René Laennec heard the language of pathology. A diseased heart appealed to him for aid. Injuries that for centuries had been inaudible now found a voice. A sick organ murmured its tale of woe into the ear of a great and sympathetic physician. Auscultation, the crowning glory of physical diagnosis, came into existence.

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In the guesses of philosophers like Democritus, who had nothing except the deductive method, we find foreshadowed nearly every principle of modern science, but the ancients knew practically nothing of auscultation. Even Hippocrates refers to the subject but once, and his observation is erroneous. He says in *De Morbis,* "You shall know by this that the chest contains water and not pus, if in applying the ear during a certain time on the side your perceive a noise like that of boiling vinegar." Aretæus, too, seems to have known and practiced a sort of auscultation, but otherwise medical antiquity had no ear.

In the seventeenth century the Englishman Robert Hooke stumbled upon the truth, but although this versatile genius sowed seeds in twenty different fields, he never remained to harvest the crop. This is still enough unworked soil in Hooke to support discoveries for the next three centuries:

"I have been able," wrote Hooke, "to hear very plainly the beating of a man's heart; and it is common to hear the motion of the wind to and fro in the guts and other small vessels; the stopping in the lungs is easily discovered by the wheezing, the stopping the head by the humming and whistling noises, the slipping to and fro of the joints, in many cases by crackling and the like. As to the working or motion of the parts one amongst another, methinks I could receive encouragement from hearing the hissing noise made by a corrosive menstruum in its operation, the noise of fire in dissolving."

Rarely has an investigator in medicine had so few predecessors as Laennec. After his invention Laennec toiled like a fanatic. An undersized body did the work of twenty men. He improved his stethoscope, and with his instrument discovered many secrets in the wondrous box that holds the heart and lungs. He began also to write out his observations. As the industrious days went on there gathered on his desk a pile of manuscript which looked as if it weighed more than the author. At last he was ready to write the preface, which is somewhat reminiscent of Auenbrugger's foreword:

"I may say," wrote Laennec, "that no one who has made himself expert with this method will have occasion to say with Baglivi, 'Oh, how difficult it is to diagnose disease of the lungs!' But our generation is not inquisitive as to what is being accomplished by its sons. Claims of new discoveries made by contemporaries are likely for the most part to be met by smiles and mocking remarks. It is always easier to condemn than to test by actual experience. It suffices for me if I can only feel sure that this method will commend itself to a few worthy and learned men who will make it of use to many patients. I shall consider it ample, yea, more than sufficient reward for my labor, if it should prove the means by which a single human being is snatched from untimely death."

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It was now ready for type. The manuscripts became proof sheets, the proof-sheets became printed pages, and the printed pages became a book. Laennec's *Treatise on Mediate Auscultation* is universally recognized as an imperishable medical classic. But the author took no joy in his finished work. His life, his strength, his spirit had gone into the making of his book. The book was vital with robust and fresh-blown power; the writer was weary, broken up and undone. Laennec lost interest in everything. Food was set before him, but he could not eat. A bed was prepared for him, but he could not sleep. He breathed with difficulty, he suffered from muscular debility, the slightest exertion being followed by the greatest prostration, and often he fainted. A deep melancholy sat upon him; he was a picture of an overworked neurasthenic.

Laennec had just enough sanity in balance to know that he must escape from Paris and return to Brittany. So he left the crowded hospital wards, and after a terrible journey stood once more in Kerlouarnec, near his native town of Quimper. The sea breeze came from the shores of the Bay of Douarnenez, and the hills and the forests were green. Laennec smelled the air fragrant with fresh butter. He saw the long-haired peasants stand knee-deep in fields of buckwheat; he heard the girls singing as they drove the cows from pasture, and he felt that here he might recover. Nature was his physician, and she prescribed him daily doses of the earth and the sea and the sky. Abstaining from mental effort, he spent his time in the open air, riding horseback, angling in the stream, hunting the woods for foxes and partridges. The breath of a new life entered that wasted frame; color crept into those pallid cheeks. "Anne, cook this pair of snipes," he said, as he put down his bag and rifle, "I'm as hungry as a bear." The household was in delight—René was getting well.

For two years Laennec lingered in the neighborhood of Quimper. Quimper is the quintessence of Brittany—everything characteristic of the province has retreated and crystallized there. Quimper has not wound her clock for centuries, and the sands in her hour-glass do not run. It is the same time now that it was when the Druid priests chanted their heathen hymns under the oaks, and if they returned they would see the monuments they erected still standing, but surmounted by a cross. In Quimper, on the cradle and the grave alike, falls the dust of a distant past.

Laennec loved Quimperism—who ever heard of a Breton that did not relish the very dung-heaps of Brittany? Breton

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sailors have been known to pine so passionately for their native land that they died heart-broken upon the voyage. Laennec was sympathetic towards the peasantry, and was ever ready to use his medical skill in their behalf—and forget the fee. As a member of the Ultramontane Church, Laennec was a determined enemy of free institutions, autocracy was his ideal, democracy was a red spectre to him, but though Laennec would not trust the common people to govern themselves, he was fond of them, for a man's theories do not fundamentally affect his character.

But with the return of health came the conviction that a physician's place is at the clinics and not on the mossy banks where at twilight the poet reclines. He thought of the endless invalids at Paris who were victims of improper diagnosis—he should be there with his stethoscope. It was time to exchange the gossamer ferns of the fields for the delicate gauze of the wards.

Laennec was again at Paris. During his absence his pupils had carried on his work, his book had established his reputation as a leader of the French school, and honors awaited him. Not only was he made Professor of Medicine in the College of France, not only did he receive the chair of clinical medicine at the Hospital La Charité, but he had the felicity to be appointed physician to the Duchess of Berri. We need not be surprised at his gratification, for the royalty-superstitution, barbarous though it be, seems inbred in the bones of man. Even so liberal a thinker as Huxley felt flattered when he was granted an interview with a fat and commonplace widow, who through no merit of her own happened to be a queen. Goethe was a life-long sycophant at the court of Saxe-Weimar, and when the duke rode off to join the armies of the Allies who endeavored to replace Louis XVI on his bloody throne, the author of *Faust*—let the Muses blush—followed the duke.

But Laennec was more interested in the hospital than in the noblesse; essentially he was a physician, not a courtier. Again he forgot the limitations of flesh; his earnest spirit would not let him rest. Bayle had demonstrated that when tubercles are present in the lungs, the patient has tuberculosis—but the doctor could not recognize the condition until the hectic fever set in and the pus was spat up. By auscultation, however, tuberculosis could be diagnosed in an early stage, and thus the labors of Laennec began to reduce the death rate of the most prevalent of diseases. The impetus which Laennec gave to the study of thoracic troubles was felt throughout the medical world. In this instance the

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triumvirate of the Dublin School of Medicine especially distinguished themselves: Graves, by his fresh-air propaganda for tuberculosis; Stokes, by the book on the stethoscope that he wrote in his twenty-first year; and Corrigan, by his work on Permanent Patency of the Aortic Valves. To the Hospital La Charité came students from all nations to hear the lectures of the diminutive, narrow-chested man, who first raised a hopeful voice against the Great White Plague.

In connection with Laennec, another Irishman should be mentioned, David Barry, whose name has been thus embalmed in the pages of Laennec's book:

As in the preceding discussion I have constantly used the expression of contraction of the auricles, I think it necessary to remark that I do not by this intend to prejudge the question lately agitated by my friend, Dr. Barry, a distinguished physician of the English army. This gentleman has endeavored to prove, by direct experiment, that atmospheric pressure is the chief cause of the circulation in the veins. He remarks, in the first place, that the dilatation of the chest in inspiration produces a tendency to a vacuum in the whole thoracic cavity; that the walls of the pericardium and heart follow the motion of the chest; that, consequently, at the very time the air rushes into the bronchi, the blood is rapidly sucked up by the right auricle, and is precipitated into the left auricle, as well from the same cause as from pressure exerted on the pulmonary vessels.

The chief experiments on which Dr. Barry founds his doctrines are the following: 1. If we introduce into the internal jugular vein of a horse a bent glass tube, and place the other extremity of it in a vessel containing a colored fluid, we find this drawn into the vein at each inspiration, until it is all exhausted. 2. The same experiment made by adapting the glass tube to a metallic one introduced into the pericardium gives precisely the same results; 3. Having laid open the abdomen of a horse, and separated the vena cava, if we lay hold of the latter we find the vein becomes emptier and flaccid during each inspiration.

Having myself witnessed several of Dr. Barry's experiments, I am convinced of the correctness of his opinion respecting the influence of atmospheric pressure on the circulation in the veins; and I consider his discovery as the most remarkable addition that has been made to that of his illustrious countryman, Harvey.

This linking of Barry with Harvey is curious, for in spite of Laennec's eulogy, the name of his friend has disappeared from medical history. In the indices of standard works we look in vain for David Barry, and available biographic data are limited to an obituary notice in the Medico-Chirurgical Review, and to a single paragraph in the Dictionary of National Biography. Yet his career is of sufficient interest for an extended study. No other child of Roscommon county was so much at home in the scientific

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circles of Paris. His work, "Experimental Researches on the Influence Exercised by Atmospheric Pressure upon the Progression of the Blood in the Veins," appeared in French before it was published in English. Not only Laennec, but Cuvier and Cruvelhier applauded his experiments. In 1828, when yellow fever raged at Gibraltar, Barry sailed to the Rock with a group of French physicians which included Louis and Trousseau; he took part in the preparation of the report, thus becoming joint author with two of the foremost names in modern French medicine. Like Louis, he visited Russia—for the purpose of studying cholera—and upon his return was knighted. He was not entirely divorced from Ireland, being a member of a commission which investigated its medical charities. Sir David was a genial man, one of the gayest banqueteers in the profession; one night, he was "the life of the party" as usual; the next morning he was violently ill, and a bursting aneurism removed him from the feast of life.

After the elapse of a few years it was necessary for Laennec to prepare a second edition of his *Treatise*. "Second edition" to the majority of authors means the correction of a few errors, the addition of a few notes, the insertion of the legend on the title-page, Revised and Greatly Enlarged, and an expression of gratitude in the preface that another edition was required. But to so conscientious an individual as Laennec a second edition meant the rewriting of the entire book. To write a book with the sweat of your brain and your heart's blood is a serious thing; nature usually throws nervous prostration into the bargain. For a quarter of a century Langrange worked on his *Mécanique Analytique*, but when the volume was finally printed the author let it lay for over two years on his desk unopened. He was too tired. The efforts that Laennec expended upon the second issue of his magnum opus, together with the Herculean labors which this pigmy performed in the clinics, again wrecked his health on the altar of overwork. In this state his only remedy was Quimperism. Once more he returned to his native region, and life and death struggled in his sunken chest.

A party of travelers presented themselves at a house in Brittany, and knocked for admission.

"What do you want?" asked the man who came to the door.

"We are weary of wandering; let us rest at your hearth."

"Pass on; the roads are full of vagabonds; who knows who you may be?"

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"Be hospitable, brother; the sky threatens; a storm is coming."

"If you hasten you will reach the next inn before the clouds burst."

"Listen," says the spokesman of the pretended travelers, "I deceived you when I asked for shelter. I come for another purpose. My young master desires the girl of this house. There was never a youth like him. He can plow as much in one day as three hired laborers; alone he can replace an overturned cart; he has wrestled with all the able-bodied men of the village, and has laid many champions on their backs; in his hand a stick is more powerful than a sword in the hand of a soldier."

"And this maiden," replies the other, "think you there are many as good as she. She is slight and supple as the blossom-covered branches of the broom. She is a timid virgin, and when the dance begins she holds in one hand the hand of her mother, and in the other that of a female friend. But she is not here; she has long left her father's house."

"You deceive me; the yew-tree is made for the churchyard, the rose for the garden, and young girls to grace the home of a husband. Do not throw us into despair! Lead hither by the hand her whom we desire, and we will place her at the wedding-feast near her bridegroom."

"It seems we must yield to you, friend. I will fetch her," and going into the room he comes back with an old woman, and asks, "Is this then the rose you are seeking?"

"From the venerable appearance of this woman," replies the other, "I judge that she has well fulfilled her task in this world, and that she has conferred happiness on him who has loved her. But she has ended that which the other must now begin. She is not the woman I seek."

The host returns again to the house and leads forth a young married woman. "Here," he says, "is a young girl, beautiful as a star. Her cheeks are like roses, and her eyes are of crystal. Once glance from them can render a heart sick forever! This must be the fair one whom you want."

"Certainly this soft cheek and youthful freshness look like those of a maiden. But that finger, bearing the marks of rubbing —has it not often been rubbed with pap for an infant to suck?"

"Nothing escapes your notice! Tell me, is this she whom you want?" and he brings out a child.

"That is exactly what she, whom I seek, was some years ago.

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Some day this pretty child will make a husband happy. But she must remain yet a long while on the espalier. The one whom I want waits for the gardener's basket to carry her to the table of the nuptial feast."

"Friend, it is enough," says the bride's spokesman. "You deserve her whom you seek."

Together the two families enter the house. The bride and bridegroom clasp hands, all kneel in prayer, then repair to church, and return for the feast. At the head of the principal tables, opposite each other, sit the happy couple, and between them is placed a gigantic dish of butter. Hundreds of peasants are present; they eat and drink and dance; they swallow a flock of ducks and chew a herd of cows—they eat and drink and puke. They gulp down barrels of liquor till we marvel at the capacity of the human alimentary canal. They eat and drink and roll under the tables, every atom drunk.

At midnight, in the presence of the company, the bride is undressed and put into the oaken bed; the bridegroom jumps in beside her; walnuts and wine are passed to them, and the celebration continues. Gradually those guests who are not asleep begin to take their departure, and Quimperdom grows as quiet as usual —so quiet that in the silent night we can hear a hacking cough. Laennec is perishing of tuberculosis. He passes away holding in his hand a cross. He dies modestly, forgetting that the stethoscope has done more for mankind than the crucifix.

Laennec's name remained the greatest in the history of tuberculosis until the epochal evening, two generations later, when Robert Koch read his paper, *The Etiology of Tuberculosis,* announcing that a short rod-shaped bacterium was the sole and only causative agent of the universal scourge. Suffering mankind now awaits him who will discover a remedy to destroy Koch's bacillus. In high expectation Koch himself proclaimed that he had found a specific, but tuberculin alternately raised and lowered the hopes of the world. The Jenner of tuberculosis has not arisen; when he comes, when he brings to the medical market the blessed drug that will materially help to transform consumptives into normal human beings, the historical student will join in the general rejoicing, but he will not forget how much the world owes to the previous labors of René Théophile Hyacinthe Laennec.

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THE CREED OF LAENNEC

Translation by W. S. THAYER, M.D.

As for me, I shall not quit the path traced by the medical observers who have successively increased the treasure of science from Hippocrates to our day. If I diverge from some of them I do not fear to say that 'tis from a leaning toward simple observation—even though I may be accused of empiricism. Corvisart was my master, and 'tis perhaps to him that I am indebted for a certain distaste for explanations and theories.

I shall make every endeavor to present the facts alone and connected by their most striking analogies, and if sometimes I am obliged in their exposition to have recourse to some theoretical, hypothetical views, I trust that it may be evident that I am not insisting upon them, and that I may never put forward my individual opinion for *science*—that is to say, ***that which we know.***

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THE CREED OF LOUIS

Translation by C. G. PUTNAM, M.D.

The results of my researches on the effects of blood letting in inflammation are so little in accordance with the general opinion that it is not without a degree of hesitation I have decided to publish them. After having analyzed the facts which relate to them, for the first time I thought myself deceived, and began my work anew; but having again from this new analysis obtained the same results, I could no longer doubt their correctness, and I shall state them to the reader as they first presented themselves to me.

These results without doubt will be far from satisfactory, but of what consequence is that if they are true, since whatever has this character cannot fail in the end to be of real utility.

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MEDICO-HISTORICAL NEWS

The tenth number of the **Annals of Medical History**, which has recently appeared, contains part one of Montaigne and Medicine; by J. S. Taylor; the Story of a Great Consultation (Jerome Cardan Goes to Edinburgh) by Charles L. Dana; an Unrecognized Anglo-Saxon Medical Text, by Charles and Dorothea Singer; the First Scientific Work on Spectacles, by Casey A. Wood; a biographic sketch of Charles Caldwell, by William S. Middleton, and a sketch of Lafayette Houghton Bunnell, M.D., Discoverer of the Yosemite, by Howard A. Kelly.

Under the heading of Jewish Medicine, Dr. Solomon Solis Cohen, of Philadelphia, contributes to the Jewish Quarterly Review a commentary on Percival Wood's **Moses, the Founder of Preventive Medicine**, E. W. G. Masterman's **Hygiene and Disease in Palestine in Modern and Biblical Times**, Max Neuburger's **Die Medizin im Flavius Josephus**, and Moses Herman Cohen's **Spinoza en de Geneeskunde.**

With the aid of a gift from Dr. Adolph Barkan, emeritus professor of the Stanford Medical School, the University is gathering in the Lane Library of the Medical School in San Francisco a collection on the history of medicine that will be equaled by no other western institution. Dr. Barkan will give $1,000 a year, for the next three years, to which the University will be able to add from the income from certain Lane Library Foundations $1,500 a year, making a total fund of $7,500, all of which will be expended on books concerning the history of medicine. Dr. Barkan himself is now in Europe, and he has employed an expert and has also gained the assistance of one of the most celebrated professors in Europe to aid him in getting together this collection. Dr. Barkan was professor of structure and diseases of the eve, ear, and larynx in the Medical School and retired from active teaching in 1911. He has before this been a liberal benefactor of the Medical Schol Library, having given his own library dealing with the subjects in his own special field, together with $10,000, as a fund for the purchase of other books on these subjects.

At the twenty-second annual meeting of the American Therapeutic Society, held in Washington, June 3 and 4, Dr. John C. Hemmeter, of Baltimore, read a paper on "History of Alcohol as a Substance for Human Consumption." To those who regard history as dull, we recommend this passage from the professor's address: "The Greeks were the first to use wine not as an adjunct to meals, but at entertainments devoted to sensual enjoyment. They consumed wine greatly diluted with water, while listening to the music of the flute and kithara, while nude female slaves danced and sweet smelling odors permeated the halls. Rough, boisterous conduct at these affairs was regarded as beneath contempt, barbaric. There was no drinking in the open or at political gatherings, gymnasiums, or baths." The address occurs in full in the Medical Record, August 13.

American Medicine announces its intention for the next few months to reproduce on its front cover the pictures of famous American medical men whose lives and works have had a far-reaching influence on the development of American medicine and surgery. Valentine Mott is on the July cover.

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Medical Life

VOL. 28. No. 10
OCTOBER, 1921

A Savant In Distress!
See Pages 511-14

MEDICAL LIFE

Delayed Gastric Emptying
John L. Kantor, M.D.

The Trend In Therapeutics

On Medical Charity
Edward H. Ochsner, M.D.

Forerunners of Serum Therapy
Max Neuburger, M.D.

Adolph Burggraeve
W. T. Thackeray, M.D.

Fifty Years In Medical Harness
Charles Beneulyn Johnson, M.D.

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VOLUME 28 NUMBER 10 — **OCTOBER, 1921** — NUMBER THIRTEEN OF NEW SERIES

Section on Contemporary Medicine

THE MODERN TREATMENT OF GASTROINTESTINAL DISEASES

VI—The Treatment of Delayed Gastric Emptying

By John L. Kantor, M.D.,

CHIEF IN GASTROINTESTINAL DISEASES, VANDERBILT CLINIC, COLUMBIA UNIVERSITY; ASSOCIATE GASTROENTEROLOGIST, MONTEFIORE HOME AND HOSPITAL

General Considerations.—Approximately one in every six to eight patients with digestive complaints suffers from some degree of delayed gastric emptying. This condition is quite like the syndrome of gastric irritation in that it may be produced by one or more of a great variety of disorders originating either within the stomach or elsewhere in the body. Before taking up in detail the treatment of delayed gastric emptying it may be well to review briefly its various causes, and to precede this, in turn, by a short consideration of the several factors that determine gastric emptying in general. These latter are:

1. The shape of the stomach. This, of course, varies with the habitus of the individual The stomach of the asthenic empties much more slowly than that of the sthenic, even in conditions of apparent health. In severe cases of asthenia the accompanying marked ptosis and atony may cause a considerable delay in emptying.

2. The character of the motor meal. The time required to evacuate a small meal is obviously less than that required for a

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large meal. Similarly, carbohydrates leave the stomach sooner than proteins or fats, and fluids sooner than solids.

3. The tone of the stomach wall. Atony is one of the most important causes of delayed emptying. The condition may be primary as in asthenia universalis, already mentioned, or secondary as in pyloric obstruction. Ptosis is often associated with atony, but ptosis alone is insufficient to produce delay of any clinical significance.

4. The degree of acidity of the gastric juice. The greater the acidity the slower the emptying. Thus, in hyperacidity the pylorus tends to become spastically contracted and delayed emptying occurs, whereas, at the other extreme, achylia gastrica is associated with pyloric insufficiency and gastric "hypermotility."

5. Nervous influences. The nervous system may influence the emptying time of the stomach in two possible ways. The first, and perhaps, the most important, is by the closure of the pyloric sphincter in response to some irritant. In many, though by no means all cases, the expression of this irritant seems to be an increased acidity of the gastric juice. Clinically, spasm may arise directly from causes within the stomach, such as ulcer, or reflexly from causes without the stomach, as in diseases of the gall bladder. Roentgenoscopically, pylorospasm is often associated with hyperperistalsis.

Another type of nervous disturbance connected with retarded propulsion is that which occurs in fatigue, intoxications and intense emotional states. This is to be distinguished from the first type in that one cause is general or systemic and the pathological condition is probably one of entire inhibition of gastric activity. Experimentally it has been shown that in frightened animals the secretory as well as the motor functions are held in abeyance. Many of the conditions mentioned later under the head of "transient gastric retentions" fall in this group.

6. Mechanical obstruction. Foreign bodies seldom cause delayed emptying from within. The chief mechanical causes, practically speaking, are gastric new growths and cicatrices due to ulcer located at the pylorus. The most common extragastric causes are tumors and adhesions.

So much for a general survey of the factors in our problem. Actual clinical study has shown that the immediate causes of delayed gastric emptying are: spasm of the pylorus in about 60% of cases, obstruction at the pylorus in about 25% of cases, and atony of the stomach in about 15% of cases; and, further, that

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the most common clinical disorders in which this condition is met with are, in the order of their frequency: ulcer, "autointoxication" of the migraine type and gastric carcinoma (both equally frequent), gastric ptosis and atony, and cholecystitis.

Principles of Treatment.—The principles governing the therapy of delayed gastric emptying may be summarized as follows:

1. Determination of the exact degree of gastric stasis.
2. Removal of stagnant contents.
3. Restriction of feeding in proportion to the degree of stasis.
4. Institution of direct measures to overcome the stasis.

1. Determination of the exact degree of stasis. In the condition under discussion investigation not only precedes but goes hand in hand with therapy. Inasmuch as delayed gastric emptying is a dynamic and not a static state, it is necessary to perform not merely a single test, but a series of tests in order to decide on and to direct the course of treatment. Only in this way can it be determined whether the stasis is permanent or intermittent, complete or partial.

The first test to be employed is the aspiration of the fasting stomach. If food is recovered it is fair to assume that a relatively high grade of stasis is present. Should the fasting stomach be empty, on the other hand, the demonstration of stasis will demand the use of a more delicate procedure. After this preliminary aspiration is completed one of several motor meals may be administered. In the use of motor meals in general three requisites are essential: (1) The motor meal should always be given on an absolutely empty stomach. This should be established by previous aspiration and lavage if necessary. (2) The evacuation of the stomach (or its observation by the X-ray) should be undertaken exactly after the proper interval for usual evacuation of the particular motor meal employed. Of the motor meals commonly in use ordinary test breakfast (four Uneeda biscuits and 400 c.c. water) leaves the stomach within 2 hours; the milk meal (400 c.c. milk) within 5 hours; the barium X-ray meal (four ounces barium sulfate in 400 c. c. Fermillac) within 6 hours; and the Leube meal (small mixed dinner) within 7 hours. (3) The patient should take nothing by mouth after the administration of the motor meal and before its withdrawal.

The decision as to what motor meals to use in the study of a given case depends, in the first place perhaps, on the result of

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the aspiration of the fasting stomach. Thus, if much food is recovered under these circumstances one would hardly administer Leube meals for subsequent determinations, but would prefer some of the simpler combinations. As a matter of fact, whenever possible, it is wise to follow the preliminary aspiration by an X-ray study not only because this is nowadays perhaps the best standardized single test of gastric motility, but also because other important diagnostic data may simultaneously be made available. For repeated routine observations the writer favors the use of the milk meal because it is generally available and is much more readily recovered and measured than are some of the other meals in which solid food is administered. With the aid of this simple test of motor function changes in the emptying time of the stomach can be very accurately followed by measuring the amount of residue after a course of aspiration and comparing a series of such figures.

2. Removal of stagnant contents. If at the first aspiration the fasting stomach is found to contain stagnating food this should be removed as thoroughly as possible, as the first step not only in the study of the case, but in its active management. Similarly, after the removal of motor meals throughout the course of treatment the same care should be taken to evacuate the stomach completely. The reason for this is apparent when it is realized that the retention of a meal beyond the time limit ordinarily required for its expulsion can only work harm to the patient both by increasing the muscular demands on the stomach and by the development of fermentation.

The technic of gastric lavage has been described in detail in the preliminary section. Suffice it here to say that the employment of the Ewald evacuator (stomach tube and aspirating bulb) is recommended, as it is the temporary collection of the successive washings in separate containers for comparison. There is no advantage in the use of medicated fluids, though the addition of a few drops of oil of peppermint to the lavage water may be refreshing to the patient. The lavage should always be continued until the return is clear and the greatest care should be taken to see that the stomach is left absolutely empty. In some cases, particularly where pylorospasm is suspected, an ounce or two of mineral oil may be injected through the tube after the lavage is completed in the hope of "lubricating" the pylorus. In undernourished subjects olive oil may be used instead on account of its nutritive value. In this case it is well to have the patient delay the meal immediately following the lavage, so that as much

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oil as possible may leave the stomach before fresh food is introduced into it.

The best time for lavage, particularly in those patients who are up and about, is, as has been already mentioned, in the late afternoon, before the evening meal is taken. Thus, for example, if two glasses of milk are consumed at noon, the aspiration and lavage should take place at 6 or 5 p. m., depending on the degree of delayed emptying. In more severe cases, especially in those who are confined to bed and to some restricted plan of feeding, the aspiration may be done late at night, as advocated under the Sippy treatment of obstructive ulcer.

Aspiration or lavage is unnecessary in the morning, except in cases of pure hypersecretion, because no properly treated patient would be given an evening meal large enough to produce retention lasting all through the night.

3. Feeding in proportion to the gastric stasis. One of the most important principles in the management of delayed gastric emptying is that the amount and frequency of feeding be kept in proportion to the ability of the stomach to empty itself. It is obvious that the consumption of the ordinary large meals would do much more harm than good in cases of impaired motor function, first, because it is only a small fraction of this food that passes on into the intestine for absorption, and, secondly, because the retention of the excess, by its mere weight and bulk, produces atony, and by its fermentation, favors the production of gases and of chemically injurious by-products. It thus follows that in the ideal feeding of cases of delayed gastric emptying the meals should be of such bulk and character and they should be served at such intervals that no residue is carried over from one feeding to another. To be sure, in very tight pyloric obstructions such an ideal program might prove impracticable, but the fact remains, paradoxical as it may seem, that a patient can gain weight more rapidly on this restricted and precise plan of feeding than he possibly could on his own more liberal but less rational diet.

It is always well to start the treatment of a given case with feeds that are smaller in amount than those which the stomach might seem able to evacuate between meals. It is just here that frequently repeated motor meals prove their value as direct guides for the details of treatment. In the severely obstructed cases the diet should be reduced to the very minimum, the patient being put to bed and the full Sippy regimen being carried out as for obstructed ulcer, viz., three ounces of milk and

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cream every hour, powders between feeds, aspirations every night, etc. In less severely obstructed cases the patient may be put on the four meals a day plan of feeding, with a pint of milk and two eggs every four hours (at 8 a. m., 12 noon, 4 and 8 p. m.). As the gastric emptying improves, Uneeda biscuits, cereals, and later soft vegetables may be added to the diet. Foods with residues and meats are very difficult to get rid of and should be avoided until the normal emptying time of the stomach is practically restored. As progress continues the patient may be put on the *convalescent ulcer diet* and should finally graduate to the *standard bland diet.*

Inasmuch as most cases of delayed gastric emptying that have persisted as such for any length of time ("permanent gastric retentions") are associated with more or less gastric atony, it is important that no excess of fluids be taken, particularly at meals, the reason being, of course, that instead of going through at once as normally, the water is retained in the stomach with the rest of the food and thus simply increases the amount of the gastric stasis.

4. Direct measures to overcome the stasis. It has already been pointed out that in any given case of delayed gastric emptying it may be impossible to tell right from the start how much of the trouble is due to an actual organic diminution in the diameter of the pyloric sphincter, and how much to such secondary factors as spasm, inflammation, or muscular hypertrophy from overcontraction. It will be readily understood, from what has been said above, that any of the three last-named conditions may tend to disappear after the conscientious institution of such conservative measures as those outlined hitherto, viz., rest, proper feeding, control of muscular spasm and incoordination, lavage. Not uncommonly, indeed, an apparently severe case responds completely to careful diet and a course of lavages. In other cases, again, most of the obstruction may be relieved and the rest taken care of fairly satisfactorily by continuing the above measures indefinitely. This state of affairs may apply also in permanent obstructions where operation is refused or rendered inadvisable for some special reason.

We come now, however, to those cases where from our clinical findings in general and from the failure of our therapeutic test in particular we are forced to the conclusion that the obstruction is organic and permanent. Such is the case, for example, in tight pyloric obstruction from an old ulcer. Here the remedy must be direct and radical and consists in the sur-

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gical operation of gastroenterostomy—the manufacture of an artificial anastomosis between the stomach and the adjacent small intestine. In regard to this operation—which gives such immediate and brilliant results when done under the proper indications—it may be said in a general way, that the more rapidly and simply it is performed, the better for the patient. In other words, very little is gained, and much may be lost by combining this procedure with attempts either to restore or destroy the patency of the pylorus (ligations, resections, or excisions). The obvious exception to this rule is the condition of malignancy where the discovery of an early growth may invite and justify the most radical procedures.

Two points in connection with the operation of gastroenterostomy still deserve mention. The first relates to the preliminary preparation of the patient; the second to his after-treatment. Much can be done in the way of insuring a successful outcome to the surgical intervention by a thorough ante-operative cleansing of the stomach and restriction of diet. In fact, the amount of food given by mouth can ofttimes be reduced to such a degree that the abolition of residues is completely accomplished. Where necessary, sufficient fluids can be supplied by rectum and a certain amount of nutriment can also be introduced by the same channel. By such measures the size of the stomach is decreased, the tonus improved, and the risk of post-operative distention is also possibly lessened.

Following the operation, on the other hand, the greatest care should be exercised in reeducating the upper digestive tract to the reception of food under the altered anatomic and physiologic conditions. It should be remembered that the gastroenterostomized stomach tends to discharge relatively large amounts of food rapidly into the proximal portion of the small intestine, and this, too, in individuals whose small gut has been kept for months or years in an unusually jejune condition. The mere recital of these facts should be sufficient warning against the too early resumption of large feedings. Sufficient time should be given for the readjustment; *festinare lente* should be the rule, and the institution of a graded course of feeding, as in ulcer diet, may well be the practice, in the management of post-gastroenterostomy cases. In general, the *standard bland diet* may be regarded as the maximum range of feeding in gastroenterostomized individuals.

Transient versus Permanent Gastric Retentions.—Enough has already been said to indicate the fact that for certain clinical

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purposes it may be profitable to distinguish between so-called transient and permanent gastric retentions. Perhaps at this point it may be well to recapitulate the salient features of this distinction. Transient retentions in general are those due to some temporary or recurrent cause such as migraine, intoxications of various kinds, emotional and nervous shocks, and reflex spastic conditions arising from lesions either in the stomach, elsewhere in the digestive tract, or outside the digestive tract entirely. Permanent retentions, on the other hand, are those due to some local progressive organic disease such as ulcer or growth, or to extraneous pressure, or to marked ptosis and atony associated with general asthenia or with some general wasting disorder.

The therapy of transient retentions is on the whole general and indirect, that is, it aims at the removal of the underlying cause wherever possible, and treats the retention itself only as a secondary matter or incident in the clinical picture. In permanent retentions, on the other hand, the gastric stasis, no matter what its origin, becomes the chief concern of therapeutic endeavor. In this case direct relief of the obstruction as such is necessary, and, except in cases of predominating ptosis and atony, surgical intervention is frequently resorted to.

Treatment of Special Conditions.—a. Minor transient retentions. These are such as occur at the beginning of acute infectious diseases, from overeating, or from intoxication with alcohol or tobacco. They are generally manifested by the vomiting of food eaten "the night before" and take care of themselves in that manner. Should therapeutic interference appear necessary, an old-fashioned emetic dose, or in those accustomed to it, a rapid lavage, will suffice for the purpose.

b. Migraine and similar "chronic intoxications." That migraine attacks are accompanied by gastric retention is apparent from the frequent association of vomiting of stale food and the occasional relief that follows. The exact nature of the metabolic upset (?) that seems to cause both the headache and the gastric stasis is still unknown, but treatment along "general lines" and the correction of any associated defects such as ptosis and atony often lead to a diminution in the number and severity, if not to a complete disappearance of the attacks in question. Intestinal "autointoxication" from coprostasis has been shown to be associated with delayed gastric emptying, particularly in children (Kerley). In such cases the correction of the constipation

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has been promptly followed by the disappearance of the gastric retention.

c. Ptosis and atony. Whatever ptosis and atony results directly from organic pyloric obstruction is merely incidental and deserves no special consideration. Ptosis and atony *as the primary cause* of delayed gastric emptying is associated either (1) with a congenital state of universal asthenia and atony, or (2) with a progressive wasting disease that is not infrequently terminal. The treatment of the former condition has already been considered in the section on the treatment of ptosis and atony. It consists essentially in a carefully planned fattening cure, in support to the lower abdomen, in occasional lavage, and in general physical reconstructive and hydrotherapeutic measures. Delayed gastric emptying due to atony associated with a chronic wasting disease is as a rule not amenable to curative treatment. This condition is perhaps best illustrated in the dyspepsia accompanying advanced pulmonary tuberculosis. Therapy is at the most palliative in nature and is limited practically entirely to dietetic measures. The food should be restricted in bulk and should be at once as nutritive and as palatable as possible. Lavage is but seldom practicable.

It need hardly be mentioned that in neither of the last two forms of atony and ptosis is operative interference justifiable. Asthenics never make good subjects for surgery.

d. Gastric carcinoma. Gastroenterostomy should be done early in cancer of the pylorus (even if a radical resection should prove impracticable) in order that much suffering incidental to the disease may be avoided. If this procedure is delayed too long it may be refused on the ground that the patient will be unable to survive it and an opportunity will be lost to be of some slight service in the face of this dreaded disorder.

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The Trend In Therapeutics

1. U. N. BRAHMACHARI: The Treatment of Malarial Fever in Individuals Susceptible to Attacks of Black Water Fever by Intravenous Injection of an Antihemolytic Quinine Solution, *Indian Medical Gazette,* June, 1921.

2. F. J. W. PORTER: The Treatment of Erysipelas, *Indian Medical Gazette,* June, 1921.

3. HENRY E. MICHELSON and DAVID M. SIPERSTEIN: Experiences with Sodium Arsphenamin, *Archives of Dermatology and Syphilology,* August, 1921.

4. HENRY E. MICHELSON and DAVID M. SIPERSTEIN: A Review of the Literature and a Discussion of Silver Arsphenamin, *Archives of Dermatology and Syphilology,* August, 1921.

5. BERTOLOTY: Silver Arsphenamin and Malta Fever, *Archives of Dermatology and Syphilology,* August, 1921.

6. EDWARD AHLSWEDE: Therapeutic Items from a Skin Clinic, *Urologic and Cutaneous Review,* September, 1921.

7. RALPH H. MAJOR: The Treatment of Empyema with Gentian Violet, *American Journal of the Medical Sciences,* September, 1921.

8. J. W. MCCREADY: A Suggestion for the Treatment of Pellagra, *Medical Record,* September 3, 1921.

9. EDITORIAL: The Use of Pituitary Extract, *The Therapeutic Gazette,* September, 1921.

10. CARL VOEGTLIN, M. I. SMITH and J. M. JOHNSON: Therapeutic Value of Chaulmoogra Oil and its Derivatives in Experimental Tuberculosis, *Journal American Medical Association,* September 24, 1921.

11. P. LEREBOULLET: Organotherapy in Sclerodermia, *Bulletins de la Société Médicale des Hôpitaux,* July 22, 1921; abst. in *J. A. M. A.*

12. G. BOUCHÉ and A. HUSTIN: Protein Therapy in Gynecology, *Gynécologie et Obstétrique,* July 1921; abst. in *J. A. M. A.*

13. MAXIMILIAN A. RAMIREZ: Protein Sensitization with Special Reference to Bronchial Asthma, Hay Fever, and Eczema, *New York Medical Journal,* September 21, 1921.

14. JOSEPH C. REGAN: The Advantages of Serum Therapy as Shown by a Comparison of Various Methods of Treatment of Anthrax, *American Journal of the Medical Sciences,* September, 1921.

15. SIEGFRIED BLOCH: Is Hypothyroidism Curable?, *Long Island Medical Journal,* August, 1921.

Contemporary therapeutics is a state of chaos. After reigning as the undisputed monarch of medicine for ages, therapeutics suddenly found itself expelled from its chair at Johns Hopkins. Drugs which were always included without question in every pharmacopeia, were summarily dismissed from our Ninth Decennial Revision.

Yet it is a short-sighted view which considers therapeutics on the decline. The art of therapeutics is not dying—it is changing, and thereby acquiring new life. We may hear less of pow-

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ders and boluses, but how much do we hear of intravenous medication, radium therapy, protein sensitization, and serum therapy! The cross-currents of modern methods of attacking disease are bewildering in their variety; it is difficult to track them all, but we will endeavor, from month to month, to exhibit to our readers, the dominant tendencies of contemporary therapeutics.

1. BRAHMACHARI is teacher of medicine at the Campbell Medical School, of Calcutta. At the meeting of the Medical Section of the Indian Science Congress held in Calcutta last February, he opened a discussion on the treatment of cases of malarial fever, which were susceptible to attacks of black water after administration of ordinary solutions of quinine. He described one such case in which fatal results followed the administration of quinine bihydrochlor intramuscularly on two successive days in doses of 5 and 9 grains, respectively. In the discussion that followed at the meeting it appeared that the treatment of cases like the above was one of the most difficult problems in tropical medicine.

Brahmachari felt that the whole problem resolves itself into one of administration of quinine in such a form that should not only have no hemolytic properties, but should be able to exert an inhibitory action in a hemolytic system. At the time of the above discussion he did not know whether such a solution could be prepared.

He has recently tried to prepare various solutions of quinine without the aid of any acids, and after extensive experimentation he found that the following solution of alkaloidal quinine possesses very marked antihemolytic properties:

Quinine alkaloid, 5 grains.
Alcohol, 50 mns.
Urethane, 3 grains.
Calcium chloride, 7.5 grains.
Glucose, 300 grains.
Normal saline, 200 mils.

In view of the remarkable antihemolytic properties of the above solution, the author invited the workers in the Dooars and other parts of the world where black water fever is frequently met with, to give it a trial.

2. PORTER, of Bombay, has lately seen rather striking results in the treatment of erysipelas by the use of carbolic acid. The treatment consists in painting the entire surface of the involved area with 95 per cent. pure carbolic acid on a cotton-wool

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swab and extending half an inch into apparently healthy skin. It is left on until the purplish area of the inflamed skin is replaced by a pretty complete whitening of the skin, which must be waited for. The whitening must not be allowed to proceed to complete blanching, and when large areas are involved, only a portion must be painted at one time.

The second step consists in going over the blanched area with swabs saturated with methylated spirit.

If thoroughly done, the whitened area again becomes pink and the alcohol *must be laid on until this is accomplished.* Afterwards, other areas should be attacked in the same way until the whole operation is completed in one sitting. The subsequent management consists in the application of moist dressing—simple saline or 1 in 20,000 perchloride of mercury.

The first case was an old lady in whom the disease had affected one thigh and leg to a considerable extent. The second was a case of facial erysipelas. Both had been given full doses of anti-streptococcic serum before Porter saw them, but the disease was still spreading. In the second case, he gave two intravenous injections of liq. iodi m. xx at 24 hours' interval. This was equal to gr. 1 of solid iodine and his recovery was very rapid.

In both cases the spread of the inflammation stopped at once after the application of the carbolic acid. The importance of attacking the spreading edge of the inflammation has, of course, been known for many years, and various remedies, such as nitrate of silver, tr. iodi and tr. ferri perchlor. have been used. None of these remedies, however, have anything like the potent and rapid effect which is produced by carbolic acid.

3. MICHELSON and SIPERSTEIN, of the University of Minnesota, report their experiences with sodium arsphenamin. With the exception of one preliminary report, all of the literature on this subject is confined to the German. The authors reach the conclusion that sodium arsphenamine is a readily soluble, easily administered and safe preparation; it exerts a marked influence on clinical manifestations of syphilis; courses should be supplemented with mercury; the therapeutic efficiency is apparently equal to that of the other arsphenamins; the effect on the Wassermann reaction is about on a par with that of the other arsphenamins. They believe that the change from a positive Wassermann to a negative is to a large degree dependent on the age of infection at the time treatment is instituted and on individual response to a certain amount of therapy.

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4. MICHELSON and SIPERSTEIN likewise report their experiences with silver arsphenamin, the latest of the arsphenamin series of drugs that is being used in America. Silver arsphenamin was suggested by Ehrlich, whose untimely death cut short his researches, which were continued by Kolle, who finally elaborated silver arsphenamin. Kolle, in the first of a series of articles (1918), gives the following table which shows that silver arsphenamin has a more profound effect on experimental syphilis than any of the other members of the arsphenamin group. He concludes from his work that silver when combined with the arsphenamin molecule forms a combination which has a greater spirocheticidal action than other combinations with which he worked:

EFFECT OF VARIOUS DRUGS ON EXPERIMENTAL SYPHILIS

Drug.	Therapeutic Dose	Spirochetes Disappeared After
Old Arsphenamin	0.01 gm. per kilo	72 hours
Neo-Arsphenamin	0.015 gm. per kilo	48 hours
Copper Arsphenamin	0.004 gm. per kilo	96 hours
Gold Arsphenamin	0.005 gm. per kilo	48 hours
Platinum Arsphenamin	0.005 gm. per kilo	48 hours
Silver Arsphenamin	0.004 gm. per kilo	24 hours

After a careful survey of the literature and as a result of a limited personal use (250 ampules), Michelson and Siperstein feel they may safely state that silver arsphenamin is an efficient spirocheticide, which has a pronounced effect on the visible lesions of syphilis. It is not surprising that the effect on the Wassermann reaction is variable. The effect of all of the antisyphilitic remedies is variable in their action on this phenomenon. The personal factor must be considered; and since the same person cannot receive two drugs under precisely the same circumstances (age of infection, etc.), it is impossible to make an accurate comparison. Suffice it to say that the consensus of opinion of the many observers is that in the majority of cases of fresh syphilis a positive reaction becomes negative after the first course of from six to ten injections of silver arsphenamin.

They note that the technic of solution and injection is perplexing to some operators. Because of the brown color of the solution, it is impossible to see undissolved particles. They have found that silver arsphenamin, being a heavy salt, immediately sinks when sprinkled on the surface of its solvent. If two beakers are used, the fluid may be gently decanted from one to

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the other, and when no residue is left in the bottom of the first beaker, the solution is ready for injection unless one wishes to use a filter. They encountered no difficulty in seeing the blood on aspiration after venipuncture. By using a Luer syringe with a long glass nozzle, the red blood can easily be seen passing through the lumen of the nozzle. There is considerable variation in the optimum dosage. An initial dose of from 0.05 to 0.1 gm. for a person of average weight is best—with a routine dose of from 0.2 to 0.25 gm. Many of the physicians, however, used 0.3 gm. with impunity. Solution in from 10 to 20 c.c. of water appears to be the strength of solution chosen by most of the observers. Remember the necessity of making slow injections, and that the more dilute the solution the less the danger from reaction. Since Kolle advised the mixture of aspirated blood with the solution in order to reduce the toxicity (a fact which he ascertained by animal experimentation), they believe it should be the accepted technic: Dissolve the necessary dose in 10 c.c. of sterile distilled water, draw into a 20 c.c. Luer syringe, make venipuncture, aspirate about 10 c.c. of blood, and reinject the entire solution slowly. They have infiltrated 1 c.c. of such solution paravenously to note the effect. It was decidedly less painful than a like amount of sodium arsphenamin, and passed off more rapidly.

There is no difficulty in detecting an oxidized product. It is necessary to make up the solution first. The perfect product makes a rather sparkling, clear, dark brown solution. A spoiled product has a dull, muddy, grayish brown appearance.

5. BERTOLOTY, at the Society of Dermatology and Syphology, of Madrid, told of two patients with Malta fever who had been treated with all the usual measures without any success. He tried silver arsphenamin with such good results that the cure was complete. Sainz de Aja added to the two cases Bertoloty reported, one more in which arsphenamin had been used. After the first injection the fever cycle disappeared; then recidivation occurred. More arsphenamin was administered, and the patient recovered completely.

6. AHLSWEDE, of the University Skin Department, Eppendorf Hospital, Hamburg, states that the antipsoriatic effect of chrysarobin is generally known. Chrysarobin has certain disadvantages. It stains the skin, the hair, clothing and bed linen. If used over large areas in great doses it usually causes irritation of skin and occasionally a rise in temperature. In 1916 Galewsky

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and Unna introduced cignolin as a substitute. This has stood rigid tests as it shows the following distinct advantages: (a) Quicker and more lasting effect than chrysarobin, (b) Slight irritation of skin, if any at all, (c) Less danger of conjunctivitis, (d) Less staining of linen, etc.

Cignolin, the synthetic substitute for chrysarobin, is an oxyanthranol derivative and differs from chrysarobin by the lack only of the one methyl-group which according to Unna explains the more energetic effect.

Cignolin is a yellow powder soluble in chloroform and benzol. The surprising effect on psoriasis and eczema seborrhoic sporiatiforme, induces him to publish some details about its special qualities and methods of application.

Cignolin was applied with good effect in the following prescription:

Cignolin .....0.25 to 5.0
Vaseline 100.00

also as a ½ per cent. to 5 per cent. solution in benzol.

He makes an attempt based on practical experience in the treatment of skin diseases to explain the observations and reflections which led to modern heliotherapy, to describe its essence and present a standard of application. The ideas are chosen for publication at a moment when heliotherapy is in a state of evolution, as new sources for artificial sunlight have been invented, old ones modified, whilst at the same time many false impressions as to the actual therapeutic benefit which can be expected from them have gained publicity. It is understood that nothing but an exact knowledge of the physical qualities of the rays one exposes a skin to as well as a very critical observation of the effect these rays have on the skin can determine the matter of results. The tissues (histological examination) and the body as a whole can furnish a reliable measure for judging the value of heliotherapy in dermatology.

Reyn, Ernest, Rollier and Vulpius were the first to point out the powerful healing influence of the sun on tuberculosis and lupus vulgaris. The lack of sufficient sunlight in northern Europe then led to the search for adequate substitutes. These were found chiefly in the shape of the Finsen lamp and the mercury vapor lamps (Bach's alpine sun, Kromayer lamp). Of these, according to Axel Hansen and Johansen, the Finsen light approaches nearest to sunlight in its effect. In contains the same proportion of short waved rays and long waved penetrating rays provided the filament in the arc light is exactly composed.

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7. MAJOR, of Detroit, remarks that our conceptions of the etiology, pathology and treatment of empyema have undergone a marked change as the result of observations made during the past two years. It may be a question whether our influenza experience has brought out striking advances in the therapy of that disease, but there can be no doubt that in the treatment of postinfluenzal empyema we have made tremendous strides. Whether these lessons learned in the treatment of postinfluenzal empyema are applicable to other forms of empyema the future must decide.

The treatment of empyema following influenza by the older orthodox surgical methods was followed by such an appalling mortality that many felt we were dealing with a disease quite different from the conventional postpneumonic empyema of the past. Also, postinfluenzal empyema is a complication of bronchopneumonia and presents many differences when contrasted with an empyema following lobar pneumonia, from which we have gained most of our knowledge of empyema in the past.

During the past winter a large number of persons suffering from influenza were treated at the Henry Ford Hospital, where many of these patients developed empyema. A group of these empyema cases was treated by repeated aspirations and intrapleural instillations of gentian violet.

The procedure was as follows: The chest was aspirated by means of a Potain aspirating outfit, the fluid withdrawn and 100 c.c. of an aqueous solution of gentian violet introduced into the chest through the aspirating needle by means of a Luer syringe. This solution was allowed to remain until the next aspiration. At first a dilution of 1 to 10,000 was used, followed later by dilutions of 1 to 5000 and 1 to 1000. Later in the series the first intillations were used in the strength of 1 to 5000, followed rapidly by an increase in strength to 1 to 1000. As this method was followed in a number of the earlier cases by a sterilization of the pleural exudate and clearing up of the empyema the procedure was extended to all the cases coming under observation. The greater number of the cases cleared up under this treatment, there were some failures, and in a few instances it is now apparent that surgical intervention should have been resorted to earlier.

Out of this series of 27 cases of postinfluenzal empyema 14, or 51.8 per cent, were cured without operation by repeated aspiration and intrapleural instillations of gentian violet. No relapses occurred and no deformities of the chest developed. The presence of frank pus was no contra-indication to treatment by this

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method. It is possible that some of these cases would have recovered without the use of gentian violet installations, yet because of the prompt symptomatic response to such injections and the rapid diminution or disappearance of bacteria in the pleural fluid it was evident that the dye-stuff possessed a very definite bactericidal value.

The most valuable indication that a patient is responding to treatment is a lowering of temperature immediately following aspiration, which persists and gradually reaches normal. A diminution of microörganisms or a frequent absence of them in the aspirated fluid is a favorable sign, but only when there is a temperature response to aspiration. Patients who failed to show such reactions to treatment in 15 to 20 days did not recover by this method. If the aspirations and instillations are not effectual within this time surgical intervention is indicated. This method of treatment should delay the operation only slightly longer than usual while making an attempt to clear up the empyema during this period. Failures were due usually to inability to empty the pus because of extensive pocket formation—a fact demonstrated at operation.

In the great majority of the cases repeated aspiration after thorough cocainization of the skin was performed without any great discomfort. The absence of any drainage tube through the chest wall permitted the patients great freedom of movement, both while in bed and later when they were walking about.

8. McCready, of New York, states that the successful treatment of gastrointestinal diseases by the use of the chlorine compound, chlorazene, led him to believe that this drug may be of service in the treatment of pellagra, since it is a disease of "maize" or other poisoning.

Chlorazene or para sodium toluene-sulphonchloramide was first made by Chattaway. It was introduced by Dakin as a surgical disinfectant. It is a white crystalline powder with a chlorine-like odor. It was used with great success during the European war in badly infected wounds, irrigation of the bladder and other internal cavities, but McCready thinks it is of even more value as an internal remedy.

He has had no personal experience in the treatment of pellegra, but from what he has studied of the disease, it appears to be one of the gastrointestinal tract with diarrhea as one of the most important and distressing symptoms. He regards it as established that oxygen if given liberally will be of marked value in pellagra, or in any other disease where the vital forces are

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interfered with. His successful treatment of gastrointestinal diseases with chlorazene leads him to believe it will be useful also in pellagra, and he expresses his sincere hope that some of his southern brethren of the profession will take an active interest in the use of chlorazene and oxygen in pellagra for the relief of suffering humanity.

9. An EDITORIAL calls attention to the fact that years ago when adrenalin, because of its remarkable effects, was atttracting the attention of the profession, it was pointed out that it was inconceivable for a substance which possesses real power for good not to also possess real power for harm if wrongly employed. The same statement holds true in regard to pituitrin, a substance which, like adrenalin, has undoubtedly become a permanent factor in the materia medica list. Without doubt it is often wrongly employed, and when so used, as it possesses power, it is capable of doing harm, but here the weakness lies with the person employing it and not with the drug itself. It is manifest that to use pituitrin in a case of labor before the os is adequately dilated, or when there is some obstruction in the birth canal, is distinctly dangerous. The reported cases of ruptured uterus under these circumstances is a testimony to the power of pituitrin as a uterine stimulant and not evidence that the drug is dangerous unless used in unsuitable cases.

So, too, with our present lack of knowledge concerning its influence upon the other glands of internal secretion, occasional instances in which its hypodermic use is followed by disagreeable nervous or circulatory symptoms is but another indication of its power and another evidence of the fact that we do not know enough concerning it to employ it haphazard.

Its use to hurry a labor, which nature is making slow in order to avoid damage to the mother or child, is wrong, whereas on the other hand its employment in true uterine inertia in a tired woman with a free birth canal may be exceedingly useful.

Without doubt its introduction has caused many a physician to avoid the use of forceps, and considering that oftentimes these instruments cannot be used by skilled hands and, therefore, often do damage to the mother or child, it is a nice question as to whether the employment of pituitrin, even in cases which are not best suited to its use, in the end does not do less damage than forceps have in the past.

10. Numerous attempts have been made in the past to discover chemicals which will cause the death of the tubercle bacillus within the body of infected animals. Soon after the discovery of

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this bacillus, Robert Koch himself tried to find drugs which might be useful in combating this disease. All of these attempts have been complete failures, notwithstanding the positive claims which were made from time to time. As a matter of fact, the specific treatment of diseases of bacterial origin has so far not yielded results comparable to those obtained in the treatment of diseases due to protozoa. The chemotherapy of bacterial diseases is, however, not a hopeless problem, as shown by the promising results obtained by Morgenroth and his colleagues with ethylhydrocuprien in the treatment of pneumococcus infection in mice, and the recent reports on the favorable action of chaulmoogra oil in leprosy.

The success reported in leprosy led VOEGTLIN, SMITH and JOHNSON, of the United States Public Health Service, to test out the therapeutic value of chaulmoogra oil and its principal components in experimental tuberculosis, for the reasons that the leprosy and tubercle bacillus belong to the group of acid-fast bacteria, and the work of Walker and Sweeney seems to indicate that chaulmoogra acid, the specific acid contained in chaulmoogra oil, exerts a powerful action on all acid-fast bacteria, but is inert toward nonacid-fast organisms. Indeed, these authors present figures which show that chaulmoogra acid is 100 times more bactericidal than phenol for acid-fast bacteria, including the tubercle bacillus.

Voegtlin, Smith and Johnson employed groups of guinea-pigs in their experiments; the net results of their exhaustive tests were negative. After the completion of this work a paper appeared by Kolmer, Davis and Jager reporting some experiments with chaulmoogra oil in the treatment of guinea-pigs infected with a bovine strain. Only six animals were treated, and the results were entirely negative.

11. LEREBOULLET reports a severe case of sclerodermia. At the age of 17 the face seemed to be a wax mask; the cheeks looked as if glued to the skeleton. The neck was hard and rigid, and it was impossible to take up a fold in the skin on the chest. The hands were bluish and the fingers immovably pressed against the palms. The upper part of the arms seemed the only regions that escaped the severe sclerodermia. Under treatment three years later with thyroid, pituitary and suprarenal extract simultaneously —all of which seemed to be called for by certain symptoms—plus phosphoric acid and arsenic tonics, marked improvement was realized even in two months, and by the age of 24 the sclerodermic

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condition and infantilism had entirely disappeared, the general aspect of the young man being now normal.

12. BOUCHE and HUSTIN have been applying the anaphylactic or vasotrophic shock in treatment of certain cases of amenorrhea and to arrest metrorrhagia or regulate menstruation. The method of application differs for each. Then normally menstruating women were given a subcutaneous injection of 3 c.c. of normal horse serum, and fifteen days later 1 or 2 c.c. of serum was injected into the cavity of the uterus with a Braun syringe. In from four hours to four days afterward blood appeared at the vulva, and this oozing of blood continued for from six hours to six days. A similar effect was realized in 3 or 8 women with amenorrhea, and systematic repetition of the procedure re-established the rhythm of spontaneous menstruation. No effect was apparent in the others. In 15 cases of metrorrhagia the second injection of 1 or 0.5 c.c. of the horse serum was made subcutaneously, and this was repeated at intervals of one or two weeks. At first the sensitizing injection had little or no effect on the metrorrhagia, but the anaphylactic shock from the second and later injections displayed a pronounced hemostatic action, although they did not modify an existing menstrual hemorrhage. In 9 cases of irregular menstruation repetition of the anaphylactic shock seemed to have a stabilizing action, especially during the period preceding the menopause. Leukorrhea also seemed to be favorably influenced. They theorize to explain the action of this treatment as a kind of anti-anaphylactic vaccination by a series of small repeated shocks.

13. RAMIREZ, of New York, asks in what way are we interested in protein sensitization, a subject which up to the past few years was the concern only of research workers and professors of medical science? In what way does it enter intimately enough into our diverse practices to make worth while a discussion of this kind?

Protein sensitization is defined as that state in which an individual is sensitive or hypersusceptible to some foreign protein to which he maintains a certain intrinsic physiological antipathy. This antipathy lies essentially in the blood, a product of the intricate chemistry of that tissue, about which we as yet know so little. By means of the blood it is disseminated throughout the entire organism, with the result that whenever there is absorption of the specific protein to which the blood is antagonistic, an unmistakable and typical reaction is set up, whether that absorption be by way of an abraded surface, as scarified epithelium, or

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by intact but vulnerable epithelium, as the conjunctiva or alimentary tract. How and why it is set up we do not know; it is an individual idiosyncrasy, and this remains a fascinating problem for some future Pasteur to solve. But we do know this—and this enters intimately into our practice—that even as individuals differ in susceptibility to the various foreign proteins, so do they differ in the type of their reaction. In one, the reaction may accur as the violent coryza so familiar to us as hay fever and rose fever, or what could be termed anaphylactic vasomotor rhinitis; it may occur as an eczematoid eruption; it may present itself as a gastric disturbance, or in a still more interesting fashion, as bronchial asthma.

Specific protein treatment consists of treating or desensitizing the patient with those proteins to which the individual is found to be sensitive by the skin test. Bronchial asthma caused by animal emanation is successfully treated by subcutaneous inoculations of the offending protein. Before this can be done, however, skin tests must be made with varying dilutions of the particular protein in order to find out the initial therapeutic dose. Each week the dose is gradually increased. As the amount of treatment increases, the positiveness of the skin test progressively diminishes until the skin test becomes negative with concentrated protein and the patient becomes absolutely desensitized. The treatment outlined above is given in horse, cat and dog cases, but in those patients who are sensitive to feathers, wool, and the hair or fur of other animals, it is easier to avoid these substances than to treat the patients with their protein. Pollen asthmatics are tested and treated in like manner with subcutaneous inoculations, and the treatment should be given preceding the pollen season, rather than during it. Patients who are sensitive to bacterial proteins are given subcutaneous inoculations with vaccines of that particular organism. Subcutaneous inoculations with offending food proteins do desensitize, but the process is long and tedious. The method of feeding proteins has proved unsatisfactory in many cases. The most obvious treatment is to take the offending foods out of the diet and resort only to active immunization in epidermals, bacteria or pollen cases. In most cases this is a simple matter, with the exception of those sensitive to wheat, egg and milk. The difference in the length of time required to desensitize the patient depends upon the size of the initial amount which the patient can take without symptoms.

14. REGAN, lecturer on contagious diseases at the Long Island Medical College, states that various methods of local ther-

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apy of anthrax have been in use for many years past, and are still widely employed either alone or in conjunction with other measures. If one has the time to consult the literature dealing with the subject, whether it be in periodicals or in text-books, it is at once evident what wide differences of opinion exist as to the most offective method of treatment. This is unfortunate, and is liable to lead one to the conclusion that most all the usual methods give about the same results, and it is not therefore a vital matter which one is employed in the individual case. This viewpoint must be changed, as there is now accessible certain indisputable facts which prove it to be incorrect. Almost all the measures of local therapy in common use possess too many disadvantages to be considered locally effective, and they are uniformally wthout claim to a specific effect once an anthrax septicemia has originated. Some of them have even the danger of increasing the possibility of this latter grave complication (septicemia) supervening.

He discusses the various forms of therapy in anthrax, including thermocautery, chemical caustics, surgical intervention, pulverization with bichloride, subcutaneous injection with oxygen, and the local employment of ipecac paste, but regards all as unsatisfactory, claiming that the only rational treatment is the administration of anti-anthrax serum.

The credit for the original production of this serum is due to Marchoux, of France, and Sclavo, of Italy, both investigators publishing their work in 1895. Marchoux succeeded in immunizing sheep to anthrax by use of attenuated cultures, according to the method devised by Pasteur, Chamberland and Roux, and then by hyperimmunization with virulent cultures, in increasing doses at intervals of a week, obtained a serum possessed of both prophylactic and therapeutic properties.

Sclavo, working along somewhat similar lines to Marchoux, using, however, larger animals, at first goats and later asses, succeeded in producing a potent serum for use in human cases of the disease. As recently prepared, 10 c.c. of the serum thus obtained protects a rabbit from 0.5 c.c. of fresh virulent broth culture. Sclavo immunizes his animals over a long period of time, often as long as two years.

Sclavo serum has been used extensively in Italy and South America both prophylactically and therapeutically in cattle and also in the treatment of the disease in man. It has, however, been very little employed in this country, and it is only in the last few years that the serum treatment of anthrax has come at all into use in the United States. The more frequent employment of im-

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mune serum in human cases of the disease is in no little part due to the fact that for the last few years the Bureau of Animal Industry in Washington has been preparing and has been distributing on request a very potent anthrax serum.

The credit for the perfection of this very potent serum is due to M. A. Eichhorn, formerly chief of the bureau, and his collaborators.

Cicognani reports some remarkable facts in connection with the serum treatment. In Santa Croce, in Italy, a town of 5000 inhabitants with 36 tanneries, where Cicognani has adopted the serum treatment exclusively, the workers now insist on having this treatment to the exclusion of every other, and since operative interference is unnecessary, present themselves when there appears the smallest pimple suggestive of anthrax. Cigognani remarks on the rapidity with which improvement in the general condition occurs, often within a few hours, and the pustules dry up within a few days, while convalescence is much shortened.

Regan concluded that the mortality from malignant pustule will be reduced to a minimum by prompt recognition and early serum treatment. No case of anthrax septicemia should be considered beyond hope until intensive serum therapy has failed. The serum prepared by the Bureau of Animal Industry or according to their method has been proved of marked potency, being according to certain reports twice the strength of the European preparations. As originally described by the writer, the local injection of anthrax serum into the pustule is apparently the most effective means of local therapy, and should always be used as a supplementary measure to the general administration of serum. Anthrax serum fulfils best the points requisite for an ideal method of treatment of anthrax. It is appliable to all forms and locations of the disease; yields on average the lowest mortality rate; is a specific measure; is a safeguard against generalization of the local disease if used in time; offers the least amount of scarring and deformity; causes a minimum of pain; demands on an average the shortest absence from employment.

15. Bloch, of Brooklyn, reports that fourteen years ago, at the out-patient service of the Long Island College Hospital, there appeared a middle-aged woman with three peculiar-looking girls, each about three feet in height, stout of physique and apparently abnormal mentally. All were dressed in deep mourning. The girls were distinctly filthy—pediculi corpus and capitus, accompanied skin lesions of many varieties.

These persons were referred to the Neurological Depart-

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ment, where they gave the following interesting history: The woman was the aunt of the girls, who were found in a cellar in a little town in western Pennsylvania. Their parents had died and these feeble-minded children remained in this cellar through fear. The Children's Society in that city investigated the case and communicated with this aunt, who brought the girls to Brooklyn.

On examination it was found that their ages were respectively ten, eleven and twelve years. They could neither read nor write, had no sense of modesty, and in general behaved like youngsters before school age. They appeared, according to tests, very degenerate, and only about four years mentally. Physical examination proved them to be very unclean, pulse very slow—the youngest only forty per minute. The secondary sexual characteristics were present in all, as pubic hair, enlarged busts, etc. Two of the girls were rather thick, with short, stout fingers; the pelvis more like that of women than children. A diagnosis of hypo-thyroidism was made in all three.

The children were taken to a priest with whom they were to live. He spent much time in teaching them. The aunt clothed them, and they were fed upon Thyroid Extract. At first only five grains daily were given, but gradually the dose was increased until forty grains a day were given to one girl, the others stopping respectively at thirty and thirty-five grains daily. Tremors and tachycardia were the guide when to stop or diminish our dose.

For one year these patients attended the clinic weekly. Gradually, however, they came less and less often. Finally ten thousand thyroid tablets were obtained by the aunt. She would watch the pulse and look for tremors and only present the children at the clinic when she thought hyperthyroid symptoms were developing. After about the second year they were not heard from again.

On May second of this year, fourteen years after they were first seen, the aunt and one of the girls visited the writer's private office. They were not recognized, but this girl is now five feet tall and weighs one hundred and ten pounds. She seems mentally about normal, and has charge of the entire manicure department of a large store, having several assistants under her direction. One sister is a bookbinder and earns thirty-five dollars a week—an expert in a highly skilled trade. This last girl is five feet two inches tall. The other sister is also five feet two in height, and is married and has an apparently healthy child of two years. Her husband is an architect and they conduct a very nice home. Both single sisters are engaged to be married to young men whom the

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writer has met. It hardly seems possible that all of these men would marry feeble-minded persons.

The aunt says that for the fourteen years these girls have been taking thyroid extract, at times as much as fifty grains per day. Her visit to my office was to ascertain whether they could stop the medication. Each takes now five grains a day, and each third day we are cutting down one grain per day.

This interesting family is reported for three reasons. First, to show a typical familial endocrinological disturbance; second to prove that properly handled cases of mental disorder can be apparently cured. Third, that intelligently used thyroid can be taken for many years without apparent harm to the patient.

WHAT IS LEGITIMATE MEDICAL CHARITY?[1]

By Edward H. Ochsner, B.S., M.D., F.A.C.S.,
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The problem of medical charities is very much larger than most of us are prone to think. Medicine touches practically every individual during some time of his life, and the ramifications of medical charities in a country like ours are very extensive and have a much deeper and much more profound influence upon the progress of civilization than we are likely to think when the problem is superficially examined.

Legitimate medical charity has, of course, its converse, illegitimate medical charity.

Before I go on, I want to emphasize the following statement: There is not too much medical charity in Chicago. The complaint that I wish to make, and the complaint that physicians generally make is that much of the energy which should be devoted to legitimate medical charity is devoted to illegitimate medical charity. There are some forms of medical charity that are very beneficial and there are some that are very detrimental.

This is the age of standardization. We have now standardized medical colleges. We have standardized surgeons. We are soon to have standardized hospitals all over this country. And one of the medical journals recently reported that the lay Health Commissioner of the City of Detroit is making strenuous efforts to standardize the stomachs of the citizens of that city. In view of this tendency of standardization, it occurred to me some time

[1] Address delivered before the Women's City Club of Chicago, April 18th, 1921.

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ago that it might be a good idea to standardize some of our charities; to set up certain criterions to which our charitable institutions must conform if we are to consider them legitimate.

We should oppose all medical charities which do not come up to such legitimate standards. One of the minor difficulties in medical charities is a duplication of effort. Medical charities in order to be sanctioned must be honest; they must be efficient, and they should be adequate. In order that they may be adequate, they must be economically administered. There never is enough money to go around for all the needs of medical charities, and if a charitable institution spends $100 on a patient where $50 would answer the purpose just as well, that institution verges on illegitimate charity.

Some years ago I had a discussion with the President of a Board of Hospital Trustees in reference to an addition to a hospital. This president showed me the drawings of the proposed addition, and the objection that I made was this: "You are going to spend $3,000 per bed, where you should spend only $1500 and thus have two times as many beds available." The Board of Trustees did not take my advice; they built the addition on the $3,000 per bed basis. It was not nearly so efficient a hospital as it would have been if it had been built on the $1500 basis. As a result, they have been able to care for only half the number of patients they should have cared for, because they put a great many useless things into their hospital which increased the per capita cost of maintenance. The people who did that did not do what they should have done for the City of Chicago and the poor of Chicago.

Duplication of effort increases overhead charges. Let me just illustrate the administration of charity in Chicago. The county is doing a part of it and the city is doing a part of it; with duplication of effort we increase the expense, and give opportunity on the part of those who are seeking charity illegitimately to use the city when they are through with the county, or the county when they are through with the city. Chicago would be very much better off if the County Agent's Office, the Department of Public Welfare under the County and the Department of Public Welfare under the city were consolidated. It would be better off with the Cook County Hospital, the Iroquois Hospital, the Contagious Hospital and the Smallpox Hospital all under one head. I simply use this illustration for the sake of making clear the point which I wish to make.

We must approach this problem of medical charities from

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the widest possible angle. We must look upon it not as to the effect upon one group or another of the citizens, except as the effect upon such group might injure or benefit society in general.

In our consideration of medical charities, however, we must be very careful not to retard progress in any department of legitimate human endeavor.

Next to stability of government, honesty of administration, and general intelligence of the people, the welfare of a nation depends more upon the quality of medical service which is rendered to its citizens than upon any other one thing.

The longevity, health, efficiency and happiness of a people depends more upon the integrity, ability and industry of the medical profession than upon anything else.

In our administration of medical charities, we must be very careful not to seriously injure the medical profession, because if we do we will injure medical progress, and if we injure medical progress every citizen in the country will suffer sooner or later.

Medical progress has been stupendous in the last 70 years. I doubt whether there is any department of human endeavor that has made greater progress during this time than has scientific medicine. This is reflected by the following statistics: In 1851, the average length of life in the city of Chicago was 35.3 years. To-day the average life expectancy of every child born in the city of Chicago is over 50 years, or an increase of something like 40 per cent. And this increase is due almost exclusively to medical advance, because it is the medical men who have indicated progress and its direction.

Has it ever occurred to you that there is no other group of people in this country who are striving so earnestly to make their profession unnecessary as is the medical profession? Do you realize that the building of the Chicago Drainage Canal has literally taken millions of dollars out of the pockets of the practitioners of medicine in Chicago? And yet medical men were the first who suggested and first who worked for the construction of the Drainage Canal. When I came to Chicago in 1891, there was scarcely a doctor in the city but had from two to five typhoid fever cases on his hands all the time. Today there is not a doctor in Chicago who is caring for five typhoid fever cases.

We should still devote our chief attention and especially the lay part of our population should devote its chief attention, to the prevention of diseases rather than their cure. That is the great field to which women's organizations can give tremendous impetus. I am not going to dwell upon this further, because I came across

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a little poem the other day that emphasizes this point much more forcibly than any lengthy argument which I might submit:

'Twas a dangerous cliff as they freely confessed,
Though to walk near its crest was so pleasant;
But over its terrible edge there had slipped
A duke, and full many a peasant;
So the people said something would have to be done,
But their projects did not all tally;
Some said: "Put a fence round the edge of the cliff";
Some: "An ambulance down in the valley."

But the cry for the ambulance carried the day,
For it spread through the neighboring city;
A fence may be useful or not, it is true,
But each heart became brimful of pity
For those who slipped over the dangerous cliff;
And the dwellers in highway and valley
Gave pounds and gave pence not to put up a fence,
But an ambulance down in the valley.

For the cliff is all right if you're careful, they said,
And if folks even slip and are dropping,
It isn't the slipping that hurts them so much
As the shock down below—when they're stopping.
So day after day, as these mishaps occurred,
Quick forth would these rescuers rally,
To pick up the victims who fell off the cliff
With their ambulance down in the valley.

Better keep them all well than cure them when sick,
For the results of experience are thrilling,
To cure up the sick is good, but it's better
To prevent the people from illing.
Better stop the cause and source of infection
Than add more men to death's rally;
Better put a strong fence at the top of the cliff
Than an ambulance down in the valley.

The medical profession should be supported in its effort to prevent disease. Consequently, our greatest effort should be in prevention, not in palliation. A good many of the schemes which are being advocated at the present time are simply palliatives, and I would not give my support, my energy or my money for one minute and you ought not to—to palliative schemes when prevention demands all of our energy and all our efforts.

Further, we should not support schemes which pauperize the public or destroy self-respect. I am very sorry to say that some of our medical charities destroy self-respect.

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Let me read you one illustration: Four months ago the wife of a public school teacher came to me with the following story: About six months previous she had gone to one of our largest quasi-public hospitals to be confined, because this hospital was under the management of a religious organization of which she had been a member since childhood. During her stay at the hospital, it was discovered that she needed a surgical operation, so six months after leaving the hospital the welfare nurse of that institution called on her and told her that she ought now to have the surgical operation performed, especially since a certain prominent gynecologist had agreed to do it for her free of charge. Instead of following her suggestion, she came to me for examination and advice. I operated on her a couple of weeks later. About two months after the operation the patient came to my office for a final examination, and was profuse in her profession of gratitude for having been so completely relieved of her trouble, and in the same day's mail, by coincidence, I received a letter from her husband, from which I quote the following: "Your statement was received a few days ago. Please accept my thanks for its amount, associated as it is with the highest class of service. Thanking you with all my heart for what you have done for her and my family, I am gratefully yours."

I do not read this for the purpose of throwing a bouquet at myself. I read it for the purpose of asking you whether you do not think that that patient was better off because she came to me for her surgical operation, paid for the hospital and paid for my services, than she would have been had she accepted the free services of this other hospital? Let us analyze this case. Here was the wife of a public school teacher of the City of Chicago. Now, either she could pay for those services or we are not paying the male teachers of our city a living wage—one of the two. Either she was being deliberately pauperized by this hospital or the city of Chicago pauperizes its male teachers. I maintain that that woman and that family were a lot better off by paying for the services and maintaining their self-respect. I believe she was happier because she did it.

This one case does not prove anything; one swallow does not make a summer, but this thing is happening—thousands of times in the city of Chicago every year. And it is not fair to the people who submit to the pauperization. It is not fair to the medical profession, because I happen to know that the man who was to have performed this particular operation had spent eight years of the hardest kind of study between the time he left high school and

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the time he earned his first dollar in the practice of medicine. If you are going to take away from the medical men of the city and the state and the country their legitimate fees, and so injure the medical profession of the country as to make it unprofitable for any man to enter the medical profession, fewer and fewer men of real ability will enter the medical profession.

Medical men perform three activities for society: sanitation and public hygiene, teaching of personal hygiene, and treating of disease. I maintain—and that is where I differ with some of my friends—I maintain that the state alone is capable of properly doing the first. One hundred Gorgases as private citizens could not have cleaned up the Canal Zone, but the United States Government with one Gorgas did a good job.

I maintain that government and private physicians can do the second job. The state and the national government are doing something in the teaching of personal hygiene; and the private physician who does not teach personal hygiene every day of his active professional life is not worthy of the name of physician, and should have his license revoked.

It is not alone the giving of medicine that helps people. I dare say one out of every two patients who comes to my office receives some personal advice which will help him. If I were limited to the use of the scalpel and the giving of drugs, I would quit medicine to morrow.

I have had some experience in state service. I was president of the Illinois State Charities Commission for four years. I visited every state charitable institution in Illinois. They have some splendid medical men in their service, but in my opinion the medical and surgical and nursing service in the state institutions of the State of Illinois is mediocre on the whole. I am not going into the details of the reason why. It would take me an hour or two to do this. I want to repeat that there are many men, my personal friends, in the state service today who are doing the very best that they can. I am simply saying that the *state* always has been and always will be inefficient in treating the sick.

The treating of the sick individual is a very, very personal matter, and cannot be done efficiently by wholesale and commercial methods. The state ought therefore to keep its hands off of this phase of the problem as much as possible. Today we have to have state insane asylums. I hope to see the day when they will nearly all be closed. Today we have to have county and city and state tuberculosis institutions. I hope to see the day when these, too, will be closed.

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Let me give you a little history. About twenty years ago one of our very best nurses, a splendid girl, was suddenly taken with acute mania. I was called to the Nurses' Home where she was living. She had just graduated from our training school and was almost without funds. I stepped to the telephone and called up the director of one of our private institutions for the mentally afflicted, and I said to him: "Dr. Dewey, will you take Miss So and So if I guarantee the first hundred dollars?" He said, "Yes." That girl was taken to Dr. Dewey's institution. She was well within a year, and she has been one of the most efficient nurses that was ever graduated from the Augustana Hospital. Would that have been the result if she had been bundled into an ambulance, taken over to the Psychopathic Hospital, and then have been sent to a state hospital? It might have been the result, but it would not have been likely to have been the result. She was an unusually fine, refined, sensitive young woman, and the jar of going through the Psychopathic Hospital would probably have wrecked her for life. Her alumnæ association and her people, though poor, had an opportunity to come to her rescue and paid every dollar. I have followed that scheme in every possible case of mental disease, and in every case of acute tuberculosis where I could possible do it.

I was one of the first men who sent tubercular cases to Dr. Pettit's Tuberculosis Sanitarium. I have never sent him one case in nineteen or twenty years but what has recovered. Would they have recovered with such uniformity if I had sent them to the city tuberculosis institute? I doubt it, and I hope the time will come when the overwhelming majority of American citizens can be taken care of in small institutions like the one at Wauwatosa, and like Dr. Pettitt's Tuberculosis Sanitarium, where they will get individual and not wholesale medical treatment.

Our state insane asylums and our county tuberculosis institutions are necessary now; we must have them. I am not throwing mud at them, but they are merely a stepping stone to something better, something higher, something more efficient.

The state has no business to enter the practice of medicine except in the cases where private endeavor is insufficient. The state should confine itself to sanitation and hygiene, both personal and public.

I have here two clippings from the lay press that were sent to me. One of them I will read:

Dr. East holds a clinic at the Welfare Station. Dr. East, who is employed by the city and has devoted many years to infantile paralysis

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cases, will hold a clinic Monday, November 29, at the Welfare Station, at two o'clock P.M. As this is one of the few clinics held in Cook County, and the only one in the neighborhood, it is hoped many people will take advantage of this opportunity.

The state should be ashamed to conduct such a clinic for the treatment of infantile paralysis for persons able to pay a private physician. Every physician in Chicago pays taxes which go to make up Dr. East's salary. There are an adequate number of private physicians in Chicago today who are quite as capable of treating infantile paralysis as is Dr. East. Is it fair for the state to enter into competition of that kind? What would Marshall Field have said had the State entered in competition with him? If we want Socialism, let us have it; but let us not begin at the wrong end of the horn. The most individualistic vocation in the world is the treating of disease. If you are going to socialize this country, socialize it the other way around. Start with furnishing people shoes and clothes and houses. Let the socialization of the treatment of disease be the very last, if we are going to socialize.

In conclusion, let me say three things: First, let us work for prevention rather than palliation. Secondly, let those of us who are engaged in medical charity give ourselves and the institutions with which we are connected the acid test every now and then, and let us not be a party to medical charity which pauperizes people and robs them of their self-respect and self-reliance.

And finally, practically every eleemosynary institution is evidence of some fault in our social and economic system. It may be necessary now, but our supreme effort should be to make such institutions superfluous. Great is the nation that has no need of charitable institutions.

2155 Cleveland Ave., Chicago.

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"MY BELOVED BOOKS"

To the Editor: I am very much obliged to you for the great interest you take in my person and in my work. Your kind letters and the copy of MEDICAL LIFE with my photograph and biography pleased me very much. Pray take my most hearty thanks, and be assured that I shall try to do my best for your valuable literary undertakings, especially for MEDICAL LIFE.

All my work has been interrupted more than five years by this terrible war, which brought me far from Berlin and from my beloved books. Nevertheless I am working now again on the second volume of my "Prostitution" (the first appeared in 1912).

I should like very much to write a short "Sexual Pathology," founded on my own observations *originally* in English. Perhaps you can procure me a publisher.

Please give my best compliments to Dr. Abraham Flexner and to Dr. Tannenbaum, the editor of "Psyche and Eros," who visited me last autumn. And take yourself my best wishes for your health and work.

IWAN BLOCH, M.D.

Villa Catharina.

[Dr. Bloch's "The Sexual Life of Our Time" was published in America by Rebman, but the Critic and Guide Company is making arrangements for the publication of his "Sexual Pathology."

In Germany, whenever a group of friends get together, it is their beautiful custom to send greetings to friends who are absent. Dr. Iago Galdston, of New York, recently sojourning in Berlin, sent us a card saying: "We are dining here at Kempinski's—in the company of Dr. Iwan Bloch—and we send you greetings in our common friendship. I've spoken to Dr. Bloch about his book and expect to bring back a prospectus." The card carried greetings also from Theresa W. Galdston and Iwan Bloch. How we wish we could have been with you, Herren Doktoren and Theresa! In the meantime, leaing back in the editorial chair of MEDICAL LIFE, we flourish the friendliest blue pencil in the direction of the Weinstube Kempinski.]

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FULLY CONVALESCENT

To the Editor: Young MEDICAL LIFE is growing up! That July number is by far the best issue, besides being a real healthy size. But I've felt like saying "best yet" whenever any new issue came from the press.

The cover carries a lot of dignity. The printing as a whole is what one would expect in an honest-to-goodness magazine. Awfully glad to see things coming along so well.

New York. HARRY S. BRESSLER.

[Of the commendatory communications received regarding our July issue, we select the above for publication, because it comes from an artist who has watched the symptoms of MEDICAL LIFE ever since its first attack of printer's measles. For many months we had stormy sailing upon the linotypic sea, and are indeed glad that we have finally reached the much-desired port of typographic satisfaction.]

NEWS FROM KENTUCKY

To the Editor: I am writing in haste from the office of the Kentucky State Board of Health. They seem to have strong objections to our idea of spreading birth control literature, but I am going to fight this. We ought to have a branch here of the Voluntary Parenthood League. I am willing to undertake the establishment of it if you will send me the particulars as to how this is to be done.

I find that all the reform workers of Louisville are with us, especially the women. The fight for the establishment of these leagues will mean a big thing. Let me hear from you as soon as possible, as I want to begin work.

REV. ARTHUR E. WHATHAM.

1410 S. Floyd St., Louisville, Ky.

A LIBRARY ON CANCER

To the Editor: For some ten years or more I have been getting together a library on cancer and tumor disease. At the present time I have somewhat over one hundred and fifty volumes on the subject, many of them printed over a hundred years ago, and one of them printed in 1701.

Is there any way in which I may learn if there is any other private library in this country on cancer. So far as I know, the Surgeon General's Library in Washington is the only one that can duplicate my collection.

Minneapolis, Minn. BOYD WILLIAMS, M.D.

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SECTION ON
HISTORICAL MEDICINE

An acquaintance with the history of his science is, however, especially indispensable to the practical physician, if he would thoroughly comprehend and penetrate the secrets of his profession. To him, indeed, it is the bright and polar star, since undoubtedly it alone can teach him the principles of a medical practice independent of the currents, the faith and the superstition of the present. Moreover, it offers him as scientific gain, through the knowledge of the past, the measure for a just and well-founded criticism of the doings of his own time, places in his hand the thread by which he unites past conditions and efforts with those of the present, and sets before him the mirror in which he may observe and compare the past and present, in order to draw therefrom well-grounded conclusions for the future.

J. H. Baas.

1921 OCTOBER 22 Pages

FORERUNNERS OF SERUM THERAPY

By Max Neuburger, M.D.,

PROFESSOR OF MEDICAL HISTORY, UNIVERSITY OF VIENNA.

It remains one of the most remarkable facts that the *principle of immunization* was instinctively carried out even in ancient times as is shown by the medical customs of a number of primeval peoples. The immunization procedure against the bite of serpents is particularly to be mentioned, as this has been practiced by African and American tribes since unknown times. Other examples of pre-scientific application of the immunization principle are shown in the case of smallpox, such as the inoculation practiced by the Hindoos and Chinese, the practical use of the protective power of vaccine (before Jenner) in cattle breeding districts of England, Germany, Persia, Mexico, the wearing of amulets containing poisons which make their wearers immune against fancied kindred disease poisons and others.

Although here active immunization is concerned, yet the principle of passive immunization may be presumed as being at the bottom of some otherwise hardly comprehended remedies of antiquity. Thus we learn from Plinius that to the universal antidote of Mithridates the blood of Pontine ducks was added, for the reason that these ducks could feed on poisonous food without harm. Among the remedies against poisoning, blood or organic constituents of such animals are strikingly often found as were

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supposed to be immune to poisons. The blood of the stork, which eats snakes, parts of turtles, vipers, toads, frogs, therefore animals which actually are comparatively greatly immune to poisons have their place among the antidotes. Further, it is remarkable that such plants were chosen for antidotes as are eaten by animals immune to poisons, for instance rue (by the weasel) and origanum (turtle). The same principle lies at the bottom of the prescription to always add the flesh of vipers to the universal antidote of Mithridates and of Theriak.

There could only be the question of a conscious development of the immunization principle when the introduction of smallpox inoculation and later of vaccination into the civilized world attracted the attention of scientific research.

Probably the first who, stimulated by the success of smallpox inoculation, proposed to construct on the principle of immunization the prophylaxis of other infectious diseases also was the Hungarian physician, Shephan Weszpremi. For the purpose of study he was in London just at the time when the procedure of smallpox inoculation after ten years of good results was defended by the Society of Physicians on the ground of statistic proofs against attacks. Weszprémi in his paper *Tentamen de inoculanda peste* (London, 1755), now become very rare and recently again made known by v. Gyory, under the impression of the success of smallpox inoculation, makes the proposal to apply the immunization procedure against measles also, and the plague in particular.

But, as he states, he had another circumstance in mind, namely, the vaccinations against cattle plague in the manner that Wilhemus St. Quintinus, of York County, carried them out. This man had vaccinated eight affected calves with the poison of the cattle plague, and of these seven had not only recovered but remained immune, as none of them was later infected by the disease in spite of return to the infected herd. Malton had the same experience with an ox which survived the cattle plague and kept its immunity in an infected herd, all of which perished. Weszprémi was still further strengthened in his idea of prophylactic immunization by the case of one of his countrymen who, after recovery from an attack of the plague, had much to do with persons stricken by the plague, and with corpses during the epidemic of 1739-40, without again falling a victim to the disease. As proceeds from his statements Weszprémi knew that there is an immunization caused by a one-time survival of the disease, and a natural immunization. He also arrived at the conviction that the artificial inoculation (of the smallpox) puts a

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weaker poison of the disease into the organism. There is nothing concerning the technic of inoculation in Weszprémi's paper.

Corresponding to the experience that inoculated smallpox takes a milder course than the natural disease and nevertheless leaves an immunization against further infection behind, several physicians as early as the eighteenth century believed that it would be possible to achieve immunity from the plague if previously an artificial infection of lighter degree were brought about by weakened plague poison. This course of reasoning was very precisely explained by the Russian physician Samoïlowitz in his treatise on the Moscow plague epidemic of 1771 (German translation, Leipsic, 1785). He states that he had arrived at this conclusion by observation on himself and on his colleague, Pogoretsky. Both infected themselves at their duties in the hospital with pus from plague-sores, both sickened in a comparatively slight degree of the plague and attained immunity to a certain degree. "As the pus which discharges from a plague-sore when completely ripe usually is quite particularly benign, the thought arose in me of inoculation of the plague. Should this not be in part serviceable to those who are obliged to nurse the plague-stricken? As I had been infected three times, and as I had withstood these three attacks very easily and fortunately, such a happy result induced me to propose such an entirely novel method which I have further discussed in my Mémoire sur l'Inoculation de la Peste, à Strassbourg imprimé 1782 and in my Lettre à l'Académie de Dijon, imprimé à Paris, 1783 (Treatise on the Plague, etc., 2nd part, page 103)."

The pus from a fully ripe plague-sore does not contain, according to S., a pure poison, but a half annulled or almost wholly degenerated poison, by which an infection of only slighter virulence is caused, yet which brings about immunization. However, the inoculation proposed by him would give protection only for the time of the same epidemic, not for the rest of life. As regards the procedure, he recommends applying a lint compress saturated with plague pus on the arm or another spot and fastening by a bandage. During the course of such an artificial infection there was need of certain therapeutic and dietetic measures, the strict adherence to which alone guaranteed success. Samoïlowitz says "the ideas which I have stated about the inoculation of the plague (at the close of his treatise on the inoculation of the plague, page 9) certainly have the merit of being new, but will they find the approval of the learned men who read them?" The answer to this question was in the negative, which is not to be

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wondered at, as very sad experiences had often been made with the far less dangerous smallpox inoculation.

In the meanwhile, however, it had temporarily come to a practical execution of the immunization principle in the prophylaxis of another infectious disease, the measles, to be sure, without assuring success and spread of the method. It was Francis Home who proposed measles inoculation with serum or blood of patients with measles, and performed it, proceeding from the assumption: "The blood of a measly patient contains a sufficient quantity of the morbid matter to produce by some fermentative power natural to it the measles" (Medical Facts and Experiments, London, 1759). Home took cotton and wetted it with a little blood which he had drawn forth by scratches between the measly spots on the skin. The inoculation was carried out by means of the blood. Alexander Monro, the younger, extolls the advantage of this method, inasmuch as the inoculated persons remained free from affections of the respiratory organs:

Quam feliciter cesserit variolarum insitio, neminem latet. Moribillorum vero insitionem multo utiliorem feliciorem fore, omnino persuasum habeo. Nimis enim notum est,quam proclivis sit hic morbus ad persuasum infestandos; quantamque exinde stragem edat. . . . Si vero per insitionem arte factam inducerentur morbilli; ab inflammatione pulmones magis vacuos fore et cutim fere tantum morbum invasurum esse, verisimillimum fit. Hoc si ita contingeret, quantum commodi et utilitatis generi humano adferret? Incommodi aut damni nihil adferre potest experimentum. Insitionim fieri posse probabile est; si tantum pustulae vel maculae maturae gossypio perfricentur et hoc dein, vel recens vel vitro accurate obturato immissum et conservatum, vulnusculo indatur; eadem prorsus ratione ac materia variolosa. (De venis lymphaticis valvulosis etc. Berolini, 1760, pag. 60.)

Although Home found adherents, particularly in Scotland, the procedure never was much used. It required more than a century of constant work in order to clarify the ideas which were at the bottom of the endeavors of a few investigators and to technically prepare their realization in a scientific way. But an honorable mention is due to these medical investigators, the forerunners of the most modern therapeutic method, men who rose to an unattainable height in their time. Behring, the originator of serum therapy, never neglected to point out that analogies to his creative ideas may be found in the past.

Vienna, Austria.

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A SAVANT IN DISTRESS

I.

Somewhat over ten years ago, Sir William Osler, who was an inspiration to all students of medical history, wrote:

> Only a few important works dealing with the subject in a systematic manner have been published within this period (the past twenty years). Gurlt's *Geschichte der Chirurgie* is a monumental contribution. The *Handbuch der Geschichte der Medizin*, designed by Puschmann and edited by Neuburger and Pagel, is invaluable as a work of reference. A history of medicine suitable for the student and general reader is a difficult book to write. Few men have the necessary qualifications for the task. The special scholar with knowledge of great fullness and accuracy in one period may be the very last man to undertake a work in which proportion is the essential element. When Fasciculus I. of Neuburger's *Geschichte der Medizin* came to hand I felt that here was a book which would be particularly useful to the English and American student—clearly written, not too exhaustive, and well and systematically arranged.

Thus, under the auspices of Osler, with the acclaim of cultured physicians in England and America, the Oxford University Press published Ernest Playfair's translation of the first volume of Max Neuburger's *History of Medicine*.

A few years later appeared Fielding H. Garrison's *History of Medicine*, containing this reference to the Professor of Medical History at the University of Vienna:

> A best modern work is unquestionably the recent "History of Medicine," by Pagel's collaborator, Professor Max Neuburger, of Vienna, which is still coming out in parts and also in process of translation by Ernest Playfair under the direction of Sir William Osler (London, 1910). Prior to this publication, Neuburger had established a well-deserved reputation for accuracy and scholarship through his valuable historical monographs on the physiology of the nervous system before the time of Flourens (1897), the mechanism of specific nutrition (1900), and the prehistory of antitoxic therapy (1901). As a writer Neuburger is eloquent, profound, absolutely sincere, and a good stylist. As a scholar, he is richer, deeper and more serious than Baas, and his accounts of folk medicine and of Greek and Arabian medicine are by far the better of the two. Yet he has no saving salt of humor and often exhibits the Germanic tendency to rhapsodize and to wander off into philosophic reverie. The intention of his great work is, in fact, to present a philosophic synthesis of medical history. He throws many new facts into the field, but does not always present them in a simple, direct manner. The second volume of Neuburger's treatise, covering medieval medicine, is a mastery synthesis, opening out many new viewpoints. The author's firm grasp of the complex details is everywhere manifest, but the reader is apt to lose himself at the first reading. The large first volume of the English translation is printed on light-weight cloth paper, a great comfort in large-sized books. The substratum of erudition (footnotes and marginalia) has been largely omitted from the English version.

Volume One is forlorn on a shelf, and calls for its mate. We expected the publication of Volume Two, but while we

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waited, the cords of fraternity snapped between the universities of Oxford and Vienna. The most ancient of plagues attacked the human race; the cancer of conflict spread rapidly over the bosom of Mother Earth, killing her children by the million. Mankind sees the stars, but goes to the shambles.

Technically, the World War is now over; emotionally, it will not be over for centuries. What is the chief result of Europe's unending miles of new cemeteries, fertilized by the blood of an agonized generation? Countless young men sleep in untimely graves, and their final sacrifice has served only to foster militarism, and to shatter all faith in the progress of humanity.

It is a grim fact that most of the warriors and diplomats who led the war, although men advanced in years, are yet alive. They are individuals of blunted sensibilities, and think no more of men who perish as a result of their policies than of men mowed down on a chess-board by an advancing queen. Babes not yet in their mothers' wombs will one day march against each other with international hatred, will search each other in the sea and encircle each other in the air, will rush madly at each other's bellies with the glittering bayonet, because the masters at Versailles—a name long hateful in history—deliberately planted the seeds of Future Wars.

We said that the first World War was now over, and that the old generals and politicians were still alive; alas, the same cannot be said of Europe's scholars and scientists. Almost every mail brings the news that a renowned intellectual worker has succumbed to starvation or despair.

Professor Neuburger has survived the unnumbered horrors of Militarism's sanguinary cataclysm, but the aftermath of the war has left him adrift. This scholar is in the unfortunate position of being unable to continue his work; his meagre income hardly suffices for the simplest necessities of existence, and he cannot subscribe to periodicals or purchase a coveted book.

Readers of MEDICAL LIFE! a noble savant is in distress. One of the foremost students of medical history cannot return to his manuscripts—unless we aid him. It would be splendid if we could send this man back to his desk—a desk on which several great books could yet be written.

We hereby solicit a fund, to assist Professor Neuburger in his life-work. All contributions received will be forwarded at once, and will be acknowledged personally and in the columns of this magazine. For the sake of those who wish to communicate with him direct, we append the address: *Herrn Prof. Dr. Max Neuburger, Neubaugasse 79, Vienna VII, Austria.*

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MAX NEUBURGER

MEDICAL LIFE is the only monthly periodical in the English language specializing in the history of medicine, and Professor Neuburger has honored us by writing regularly for our pages—his first contributions to an American periodical—and recently he has accepted the position of Contributing Editor.

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It would be especially appropriate, therefore, if MEDICAL LIFE could send something substantial to this savant in distress, to cheer him in his mental convalescence. Then when important monographs appear, signed by Max Neuburger, ours will be the happiness of knowing that we worked with him, in silent collaboration, across the sea.

It matters not that Professor Neuburger dwells in Austria, and our home is in America. We are all children of Mother Earth, and the word "foreigner" has no place in the vocabulary of humanity. Give! Give for a most worthy purpose! Who among our readers will be the first to give?

II

Our first appeal for Professor Neuburger appeared in our May issue, with the following result:

Contributors to the Neuburger Fund

Fielding H. Garrison, M. D., Washington, D. C.	$10.00
William L. Holt, M.D., Knoxville, Tenn.	2.00
Emilie Recht, New York	3.00
Marie Robinson, New York	10.00
Victor Robinson, M.D., New York	15.00
William J. Robinson, M.D, New York	10.00
Total	$50.00

This amount has been forwarded to Dr. Neuburger by American Express Company check. Our object is to raise a fund of a thousand dollars, which means that we require $950 more. Who will be the next contributor?

Readers, many of you are in lucrative circumstances: in one day you receive more than Professor Neuburger earns in a year. We ask of you to heed this appeal in behalf of a distinguished colleague who, in the Miltonic phrase, has fallen on evil days. This proud and sensitive scholar, who finds himself in desperate circumstances because of the world's late madness, cannot ask for himself, in spite of his great need. We therefore, urge every one of our readers who can spare a few dollars to devote them to the Neuburger Fund.

In the days to come we shall scan our mail eagerly; we hope to find interesting letters and valuable manuscripts from colleagues—but with especial solicitude we shall watch for the new friends of Max Neuburger.

During the coming year we intend to publish an historical volume from the pen of Professor Neuburger; the appendix will contain the names of the contributors to the Neuburger Fund. Will your name be there? Say *Yes!* VICTOR ROBINSON.

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ADOLPH BURGGRAEVE

By W. T. Thackeray, M.D.

[William Thomas Thackeray was born in 1839, and thus is safely an octogenarian. He was the first, with C. C. P. Silva and John C. Harper, to bring alkalometry to the notice of the American medical profession, and with Dr. Silva he collaborated in translating and publishing the first book by Burggraeve that was printed in the United States. He was the founder of the Alkaloidal Clinic, and around this time made his most important convert—Wallace Calvin Abbott. One day the two doctors met on the street, and Dr. Abbott asked: "What do you intend to do with the Alkaloidal Clinic?" And Dr. Thackeray answered: "Give it to you, because I know that you will make it go." The rest is well known. Writing in the August issue of the *American Journal of Clinical Medicine,* Dr. Thackeray says: "Now, as I look upon the past, I remain to wish *Requiescat in pace* to Drs. Abbott, Silva, Pixley, Waugh, Lanphear and other branches of the tree, leaving me alone as the trunk. But new branches are growing. . . . " The following sketch of Burggraeve was kindly written at our suggestion—a recent twig hereby thanks the trunk.]

In the history of modern therapeutics probably no name stands out more prominently than that of Prof. Adolph Burggraeve, of Ghent, Belgium, and while he was not the first to become dissatisfied with the uncertain action of crude drugs and their galenical preparations, which were long fixed in the minds of the medical profession as the acme of medicaments through the teaching of men in whom the confidence of the student in medicine was supreme, yet there were thinkers among them who recognized the compound and varying character of the crude drugs, and these had become a bugbear from the untoward action of the same remedy administered to the same patient or to a new one.

Among these none were more pronounced than Adolph Burggraeve, who was born in the city of Ghent on the 6th of October, 1806, and of his early life until his graduation in medicine we have no record. He studied and graduated at the University of Ghent, after which he practiced as a surgeon and became professor of anatomy in the university where he had graduated.

While his early attention was given to surgery, he realized that it was necessary to support the vital resistance of his patients

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by the use of medicines, and during his observation of the action of the remedies used he became devoted to the perfecting of these remedies, which resulted in his adoption of the active principles of drugs instead of their crude source.

In 1866 and 1867 Burggraeve occupied himself with investigations concerning the administration of fractional doses of plant extracts, triturated thoroughly with sugar of milk.

His clinical employment of these remedies led to a lessened mortality in his surgical hospital service, and this experience led to a complete revolution of the entire therapeutic procedure. In this he followed rationally and persistently Hippocrates' idea of dynamic vitalization, and making use of discoveries in modern chemistry and in experimental physiology.

It required two years to mature this new idea and to inaugurate an entirely new therapeutic method (1868).

In 1869 in various clinical essays he made his discoveries known to the Academy of Medicine, but his papers were laid upon the table without discussion and without investigation.

As a consequence Burggraeve went to France, where he had his medicines prepared in granular form by Charles Chauteaud, who became the personal friend of Dr. Burggraeve, and so remained until his death. The new method, apparently similar to Homeopathy, yet so thoroughly differing from it, was named dosimetry. Since the remedy is adjusted both to the disease and to the patient, he also adopted as his motto *Tuto, Cito, Jucundo.*

He established and published "Le Repertoire Univeral Dosimetrique" (1872-1894), in which he explained and fully demonstrated that his ideas were founded and based upon the laws of life.

"The vital principle holds normally the body in a condition of health. If the dynamic principle gives way, illness results from vital asthesia. The remedy (alkaloid dynamizers which are simple and precise) must be sthenic. Strychnine, which is the vital incitant par excellence, becomes the 'cheval de guerre' everywhere and at all times. The alkaloids and the definite active principles of plants are isolated, selected, studied and experimented with. It is a question only of knowing how to employ these arms of precision.

The law of acuteness and chronicity of treatment follows naturally: small initial doses repeated to physiological effect, or to drug effect which is not toxic, administered more or less frequently in accordance with the intensity of the disease and with the resistance of the patient. The law of causality appeals to the

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ADOLPH BURGGRAEVE

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dominant and the secondary symptoms to the therapeutic varient. Every morbid phenomenon must be counteracted, expectant treatment being a sign of therapeutic impotence. Disease disturbs function before altering structure. Therefore, without playing a culpable waiting game, it is necessary to jugulate the ill in its first manifestation by defervescents or by vital regulators."

Thus the writer has given, in practically Burggraeve's own words, his theory and practice of dosimetry, which at first was somewhat primitive, but has been perfected by the effective collaboration of others.

In France, dosimetry was enthusiastically received except by the established school. Surgeons, teachers, deans of medical faculties and members of medical academies looked upon the reform kindly, and a society of dosimetric therapy was formed in 1874.

Dr. Burggraeve visited Spain, Portugal, Italy, Switzerland, England, Holland and Denmark, and was received everywhere with honor, and a large number of physicians became the followers of his methods.

In 1878 he presided at the brilliant congress of dosimetrists held in Paris in that year, and at a second one in Madrid in 1881. At this time he was seventy-five years of age. At the age of eighty and eighty-six he passed through two serious operations, and during all this time he edited his monthly "Repertoire" unaided until his eighty-eighth year, and at the same time published several voluminous books.

The "Belgian Hippocrates" died in his native city at the age of ninety-five, and up to the day before his death was engaged in his labors for humanity.

Scientific and public honors were showered upon him both by his own and foreign countries where his work was known and appreciated; in Belgium he was emeritus professor of Ghent University, member of the Royal Academy of Medicine, senior surgeon of the Civil Hospital of Ghent, officer of the Order of Leopold of Belgium, commander of the Order of Charles III of Spain, commander of the Order of Christ of Portugal, and many other honorary positions in France and England.

The writer has been a faithful follower of Burggraeve's teachings for many years, and now in his four-score years looks upon it as a labor of love to tell what he has learned of the great Belgian.

Fowlerton, Texas.

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FIFTY YEARS IN MEDICAL HARNESS, OR THE STORY OF A COUNTRY DOCTOR

Charles Beneulyn Johnson, M.D.,

Author of Medicine in Champaign County, Muskets and Medicine, Illinois in the Fifties

1—I Get My Bearings

Near the close of a cloudless day in September, 1865, I got back to my home in Illinois at the end of my term of service in the Union Army. Five months before Lee had surrendered to Grant at Appomattox, and soon after the War of the Rebellion, as we then termed it, came to an end.

Previous to my enlistment in August, 1862, my youthful days were alternated between going to the village school in the winter months and work on the farm during the warmer season. Not long after entering my teens I began to long for a collegiate education, and with this thought in mind applied myself as best I could in school and, in addition, devoted to study such spare hours as I could find in the working season. Meantime with fond anticipation I was looking forward to the fortunate hour when it would be my privilege to cross the college threshold as an accredited student.

But my college dreams were rudely dissipated, my plans for a higher education were hopelessly disarranged, when in response to President Lincoln's call for six hundred thousand volunteers in the mid-summer of 1862 I enlisted as a private soldier. As the details of my army life are recorded elsewhere (see "Muskets and Medicine," by the author), let it suffice to say here that this new life materially changed my former viewpoints in various ways. The result was that when I came back to civil life on that beautiful September day it was really without definite plans for the future—this notwithstanding that my twenty-second birthday was near at hand. Indeed, so truly was this the case that in a figurative sense it might have been said that my future was an unknown sea upon which I was about to embark, without map, chart or compass.

At this time my immediate family consisted of a widowed mother, three sisters, all grown up, and an older brother, all of whom were living on a farm three miles east of Greenville, Bond County, Illinois. After greeting the several members of the family we sat down to supper, for which a long drive from Carlyle, the nearest railway station and twenty miles distant, gave me a good appetite. I was weary and soon went to bed, where I found the white sheets and other furnishings a "downy-

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bed-of-ease" when contrasted with what I had so long been used to in my military service.

Next morning I rose early with the family, and finding it was corn-cutting time and that my brother was cutting his corn, I put on suitable clothing and joined him in this work. As full three years had gone by since I had done any farm labor, corn-cutting on this warm September day "went against the grain," as the saying is. However, I said nothing, but meanwhile steeled myself as best I could and worked steadily till noon-time, when a hearty dinner made me feel equal to the afternoon's work. Then came quitting time, another hearty meal, and then the welcome bed. Next day the same routine. And the next and the next, till one morning a letter came that was destined to interrupt it.

The letter was from Dr. X., of Flora, Illinois, who upon his return home from the army, where he had served in the same regiment to which I belonged, had bought a small drug store and wanted me to come and clerk in it for him. As I "was at sea" and waiting for something "to turn up," I at once wrote Dr. X. that I would be on hand just as soon as I could get ready. This done my always obliging brother drove me to Vandalia, the nearest railway station, which was twenty miles away, where I boarded a south bound train on the Illinois Central, and arriving at Odin I changed to the Ohio and Mississippi railroad, and soon reached my destination. Flora was then a relatively new town with about a thousand inhabitants and did considerable business, but I had not been long behind the counter till I was made to realize that the stock was badly run down and needed replenishing at an early date. Furthermore, to do this either money or credit was necessary, and in a little while I discovered that my employer was short on these indispensables for a business man. However, I decided to remain and try it out for a time. As Dr. X.'s house was filled to crowding I had to sleep with one of the boys, and as this I did not enjoy I asked for some quilts and blankets, which I took to the store, and when bed-time came these were spread upon the counter, and upon some of them under me and with others over me managed to sleep in comparative comfort, my recent army life helping me out no doubt. When morning came my improvised bed was rolled up and put under the counter.

One day a messenger came hurriedly in the store with the word that my employer had been suddenly taken very sick, and I at once locked the store and made my way to his house as fast as my feet would carry me. Arriving at my destination I found

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a physician at the patient's bedside, and when through with his examination he with perfect confidence assured the friends that the patient would be all right in a few hours, and that only a simple medicine would be needed. In a little time the doctor took his leave, and I followed him out of the door and returned to the store. On the way I took occasion to ask what was the nature of my employer's illness. In reply he said, "I will tell you—too much *rot-gut.*"

I was not greatly surprised, for during my association with Dr. X. in the army I came to realize that he was over fond of whiskey, but I had hoped that when he returned to civil life he would entirely leave off the drink habit. Unfortunately he did not. Meantime his stock of drugs and notions ran down to a point where it was impossible to do much business. One article we always kept in stock and sold, in relatively large quantities, namely, bitters, many makes of which in that day were on the market; but Hostetter's led them all with "1860 XX" on every bottle, and which I used to wonder the meaning of. I did not then realize that people, many of them devoted church members, bought these bitters because of the large per cent of alcohol in them all; and really not a few of those who used them were not conscious of the fact that it was the alcohol and not the other constituents in the various brands of bitters that rendered them attractive. On the other hand, a goodly number of people *did know* and *did* buy bitters because alcohol was the one enticing ingredient.[1]

In that day the use of home-made bitters had not yet gone out of fashion, and many families would buy a jug of whiskey, put some of it in a quart bottle, and add cherry bark, prickly ash, snake root, or some other bitter herb, and a tablespoonful of this at breakfast time was believed to "cleanse the blood" and conduce otherwise towards perfect health. Flora was a "dry town" so far as the voting out of saloons went, but certain persons were fond of whiskey, and through one excuse and another managed to get their "booze," though this last word was not then in use. Some of these people came to the drug store with very plausible

[1] The subject is discussed by the gifted journalist, Samuel Hopkins Adams in his *The Great American Fraud.* In the chapter on "Peruna and the Bracers" note the diagrams showing the percentage of alcohol in Paine's Celery Compound, Peruna, and Hostetter's Bitters, proving Mr. Adams's statement that "It would take nearly nine bottles of beer to put as much alcohol into a thirsty man's system as a temperance advocate can get by drinking one bottle of Hostetter's Stomach Bitters."—V. R.

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stories and frequently—more frequently than strict justice would allow, I fear—prevailed on us to let them have a pint of *Spiritus Frumenti.*

As spring approached the stock of drugs and notions ran lower and lower, and at last reached a point that would no longer justify my employer in keeping me, so I resigned my place and we had a final settlement. My employer was owing me one hundred dollars, and not having the cash he gave me a note. It so happened that he had a razor-hone that I fancied, and when I inquired if this could be purchased I was told that I could settle for this when the note was paid. Well, the note was never paid, and though I kept it for a very long time, I think finally it was destroyed as a thing of no value. The razor-hone I still have, and never use it that I do not think of my experience during the winter of 1865-6 in the Flora drug store.

One day, early in May, I bade good-bye to my Flora friends, as it turned out, forever. I had come to like Flora and really hated to leave there. While the little store in which I clerked proved a failure, I was neverthtless loathe to part company with the drug business, and before leaving Flora applied for a position in the store across the street, but it turned out that its proprietor had all the help needed. Passing through Vandalia on my way home, I applied for a place in the two or three drug stores in that old town and ex-state capital. Later I visited both of the Greenville drug stores and asked for a position, but found no opening either in Vandalia or Greenville.

Failing in my quest in the drug line I finally accepted an offer my brother made me to go in partnership with him on the farm. Carrying this out, I put on suitable clothes and with my brother worked early and late. We plowed corn and when the season came cut and shocked the oats and wheat, and later threshed and stored the grain.

The season of 1866 was a favorable one for all crops, including *ague,* and of the latter both of us came to be victims in the late summer and early fall. In addition to the usual chills and fever we both suffered from what in that day was called "bilious fever," which was attended with high temperature, intense aching of the head and back and very sick stomach. These symptoms continued for several days, when they slowly ended in recovery, while the victim was meantime very weak, with a countenance sallow in hue and greatly emaciated.

In addition to ague and an attack of bilious fever, I had what my family insisted was a congestive chill. I first had a very hard

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chill, and from that passed into a state of unconsciousness for a time, which greatly alarmed my mother and sisters, and from this they had all they could do to arouse me. However, I was in no pain, and all I can remember was a desire to be let alone.

In those days a fruitful harvest was nearly always accompanied with much malarial fever, which the doctors thought to be due to bad *air* or *mal*-aria. Mosquitoes were of course common, but no one so much as dreamed that the *anopheles* species of this insect was the purveyor of the *Plasmodium malariæ*, an organism unknown to the most advanced scientists of that day.

After we had cut our wheat and got it in shock, very heavy rains came and the grains were saturated so that sprouts as long as one's finger reached up from the sheafs. I naturally supposed the crop was ruined, but later came dry, cool weather, the sprouts withered and dropped off, and when threshing time came all was run through the machine, and no one could tell which grains had sprouted and which had not so far as outward appearances went.

Our nearest market for wheat was Vandalia, some twenty miles to the east, and to that place we hauled it in wagons. I made this trip with a load of wheat a number of times. To go there and back in one day required an early start, which could not always be secured, and consequently I sometimes returned after night-fall.

Whether it was long hours, the slavish work, the severe attacks of malarial fever or all combined I know not; at any rate, one day I came to the conclusion that the life of a farmer was not altogether to my liking. Then, too, my old love for books and study asserted itself, and in casting about for a door that might open in this direction I thought of medicine. I spoke of this to an older sister, and remarked that my two years' hospital experience while in the army would make the study of medicine comparatively easy. After hearing me through she said, "Do it, do it." Whatever doubts I had before vanished before her encouraging words and confident tone of voice, and I at once began to investigate and determine what medical school I had better attend. I sent for the catalogs of several institutions, and upon looking these over decided to go to Ann Arbor, Michigan, and take my first course of lectures in the Medical Department of the University of Michigan.

In that day attendance upon two courses of lectures was all that was required for the degree of M.D., and in the best schools the second course of lectures was an exact duplicate of the first. At Ann Arbor these lectures extended over a period of six

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months, but in some of the inferior institutions sixteen weeks covered the whole period of instruction.

When plans for studying medicine were well under way, my accommodating brother obligingly took over my farm interests and left me without care on that score.

On a glorious October morning very near my twenty-third birthday I forever bade good-bye to farm life with its cares and hardships, no less than its independence and many interesting features, when I took my place on the spring-seat of a farm-wagon beside my brother, who drove me to Vandalia, where after a good meal at a relative's I journeyed northward to Ann Arbor, then called the Athens of the West, from the fact that it was the seat of the University of Michigan.

Up to this time I had had very little experience in railroad travel, and only four years previously, when I left home for the army, I boarded a train for the first time in my life (see "Muskets and Medicine," by the author), and substantially all my travel by rail while in the service was on freight trains. However, I was no sooner seated on the train than I began to think, think, think—to think and wonder if I was not making a mistake in choosing a life-calling in relative haste. Then I began to ask myself if I was fitted for a doctor in my general makeup—in other words, if nature had so put me together that I would be able to make an average success in healing poor humanity. Then I took a mental picture of the several practitioners I had known, and wondered if I should be worthy of a place among such as these.

Meanwhile the train sped on till Central Illinois was reached, one of the world's greatest corn-belts, and this noble plant, maize, not yet touched by frost, covered most of the fields on both sides of the roadside upon which our train was making its way northward. On every hand were stalks of maize, topped with golden tassels and bearing large ears of rich promise, each one covered by a heavy green husk with a gracefully drooping "silk" at its tip. Meadows and fields where there had been wheat or oats were all a rich green, and horses and cattle were grazing and growing fat. Practically all the farm houses were painted white, and near them were barns filled with hay, and about them were orchards bending under the weight of that noblest of fruits, apples. At times our train passed through stretches of timber in which October was already beginning to do its matchless decorating, and hence a little later the oaks would appear in crimson, the maples in gold and the grape and woodvine in rich purple.

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After reaching Mendota I heard that the Illinois Agricultural Fair was being held in Chicago, so I went there for the day, visiting a number of stalls where were on exhibition the best grades of horses, mules, cattle and racing animals, and likewise pens and sheds where could be seen the finest sheep and hogs.

There were the usual number of side-shows, and in one of these the Siamese twins were on exhibition. I paid the fee and went in and looked at this world-famous twain. In the fullest sense they were brothers, and the bond that bound them together was about the size of a man's arm, perhaps fifteen inches in length, seemed to be fleshy and fibrous in character, and extended from the lower part of the sternum of one of the twins to the same locality in the other. The twins were of the Chinese race, were past middle age, and the man who had them in charge avowed that each one of them had a wife. He also asserted that in early manhood they were desirous of being separated, and with this object in view consulted the world's most eminent surgeons, all of whom agreed that the operation this would involve would be extremely hazardous, as it was thought large and important nerves and vessels passed through the structure that united them.

Just before nightfall I went to the old ramshackle station, sat up all night in the train, and in the morning, tired and hungry, I finally reached my destination, the town of Ann Arbor.

(Next Installment: *In and About the Medical Amphitheatre*).

JAMES MARION SIMS

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MEDICO-HISTORICAL NEWS

Julius Springer, of Berlin, has recently published Erich Ebstein's "Physicians' Letters of Four Centuries." It is a paper-bound illustrated volume of over 200 pages, and the price is 14 marks. The publisher's address is Linkstrasse 23, Berlin, W.9.

For several years the Urologic and Cutaneous Review, of St. Louis, has devoted two pages a month to "Musings in Historical Paths and By-Paths."

J. F. Bergmann, Briennerstrasse 38, Münich, has published Otto Körner's "Memoirs of a German Physician and Teacher, 1858-1914," Paper bound, 139 pages, 9 illustrations. 28 marks.

Among recent English articles on medical history are R. J. Godlee's British Masters of Ophthalmology, appearing in the British Journal of Ophthalmology; H. H. Bashford's Ideal Element in Medicine, Illustrated by the Life of John Hunter, running in the Lancet; D'Arcy Power's Education of a Surgeon Under Thomas Vicary, in the January British Journal of Surgery; and W. R. Jack's 1840 versus 1920, in the March Glasgow Medical Journal.

Our thanks are due Dr. S. C. Martin, Jr., of St. Louis, for sending us an interesting collection of portraits of physicians. Some of them will be reproduced in Medical Life.

The Oxford University Press has published "A Physician's Anthology of English and American Poetry," by Drs. Casey A. Wood and Fielding H. Garrison.

Captain J. S. Taylor, the editor of the Naval Medical Bulletin, is a medical history enthusiast. For recent numbers of his valuable quarterly he has written "Surgery in the Middle Ages" (April), and "A Retrospect of Naval and Military Medicine" (July).

Dr. Francis Randolph Packard, editor of Annals of Medical History, is professor of ophthalmology in the Graduate School of Medicine, University of Pennsylvania.

Dr. James J. Walsh, of New York, the famous Irish-American Italophile, delivered an address on "What Medicine Owes Italy" before the joint meeting of the Italian Physicians' Association of America, the Italian Medical Society of New York City, and the Italian Medical Society of New York City, and the Italian Medical Society of Brooklyn, at a dinner given at the Hotel Pennsylvania, on the evening of June 4. Prof. Walsh, with his usual attack of historical hysteria, claimed he was "quite convinced that when one has collected the debt that civilization owes to Italy there is so little left to owe to any other nation, at least comparatively speaking, that it is scarcely worth while talking about."

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In the June issue of Nederlandsch Tijdschrift v. Geneeskunde, of Amsterdam, H. Breukink gives a profusely illustrated survey of the conceptions of mental disease which have prevailed in various ages.

The first edition of Victor Robinson's Pathfinders in Medicine (1912) is now out of print, and the author is at work on a second edition. The first edition contained essays on Galen, Aretæus, Paracelsus, Servetus, Vesalius Paré, Scheele, Cavendish, Hunter, Jenner, Laennec, Simpson, Semmelweis, Schleiden-Schwann, Darwin. All these will be revised for the second edition, to which ten more biographic sketches will be added.

That able and industrious medical historian, D'Arcy Power, proposes to reprint, in the British Journal of Surgery, the original papers of those surgeons whose names are associated with the diseases or injuries to which they first called attention. No eponym is better known, than Colles' Fracture, and Dr. Power commences his series, in the July number, with a reproduction of Colles' article, "On the Fracture of the Carpal Extremity of the Radius," which appeared in the Edinburgh Medical and Surgical Journal (1814).

At the Medalist Meeting, June 6, of the Boston Surgical Society, William J. Mayo, of Rochester, Minnesota, read a paper, "In the Time of Henry Jacob Bigelow," which appears in the Journal American Medical Association, August 20. The address is disconnected, with much straying into by-paths, but is replete with interesting passages, such as: "One of the most splendid examples of the conviction that science comes first, and of the love and devotion to a great cause which transcends the desire for personal elevation, was the Danish surgeon, Christian Fenger, of Chicago, the father of modern surgery in the West. Fenger in his best teaching years had only unimportant hospital and teaching connections. But among his students were the late John B. Murphy, the greatest clinical teacher of surgery of my time, M. L. Harris, A. J. Ochsner and Frank Billings, the distinguished internist whose alert mind comprehends surgical conditions as clearly as the surgeon. My brother or I used to travel each Wednesday night to Chicago to attend Fenger's Thursday clinics and demonstrations. We returned home the same evening with renewed vigor and stimulus for greater effort. Every year the students of Fenger gather together for a memorial meeting. They do not meet to eulogize, but to stimulate scientific progress, and this is as Fenger would have wished. In a like manner you who were students of Henry Jacob Bigelow, New England's master surgeon, propose to perpetuate his name and his work."

The best place to buy medical history books in New York is at B. Login & Son (large stock, reasonable prices, courteous treatment), 152 E. 23rd street. Paul B. Hoeber, 69 E. 59th street, has rare items, some of them probably not obtainable elsewhere in the city. P. Stammer, 61 Fourth avenue, believes in high prices and in bulldozing methods.

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In the Medical Record of June 18 John Ruhrah, of Baltimore, comments on Puschmann's History of Medical Education, concluding with the paragraph: "Theodor Puschmann began a Handbuch der Geschichte der Medizin which was subsequently completed by Pagel and Max Neuburger. His name will go down in the history of medicine perhaps for a long time, inasmuch as his widow endowed the Institut für Geschichte der Medizin, at Leipzig, in 1909, by leaving an endowment of five hundred thousand marks. The admirable work of Sudhoff, the director, I hope to comment on at some future time."

F. M. Agnew, of Makanda, Illinois, contributes to the March Illinois Medical Journal, Reminiscences of Sixty Years' Practice of Medicine in Egypt, Southern Illinois. It contains this gruesome bit of history: "A poor family moving through the town of Anna camped at the west side of it and were taken sick, which, after a time, was decided to be smallpox, and that disease at that time didn't bear fooling with as a Cuban itch. An excellent old lady, knowing their poverty and distress, took them chicken soup and other necessaries after nightfall secretly, and avoiding the guard. Some weeks after the poor family had left the old lady was taken suddenly violently sick, and the oldest and best physician of the town was called to see her, and he failed in making a diagnosis, and called in another of the same grade from a neighboring town, and they both failed to tell 'what the matter is.' The old lady died and her funeral was attended by nearly all the town, as she was a great favorite. Two weeks later twenty-seven of that congregation took sick of smallpox and fifteen of them died from that disease."

The portrait of Burggraeve which appears in this issue is published through the courtesy of Dr. Alfred S. Burdick, of Chicago.

Dr. Rene Ledoux Lebard, of Paris, France, while preparing to come to this country to lecture on radiology, found some extra room in his trunk—he was traveling without his wife—and thereupon added boxes of lantern slides. After it was too late to make the change, he discovered he had packed a box of slides on colored illustrations in old medical books. He thought no further of the subject until he wandered into Hoeber's medical bookstore in New York. Through the enthusiastic interest of Mr. Hoeber these slides were brought to the notice of Dr. Garrison, of Washington, with the result that Dr. Lebard was invited to appear before the Section on Historical Medicine of the New York Academy of Medicine. Accordingly, on October 13th, Dr. Lebard gave a lecture and lantern demonstration on "Color Print Illustration of Medical Books up to the Year 1800." Dr. Rene Ledoux Lebard showed many interesting slides, in the meanwhile demonstrating that he is a gracious and cultured gentleman who can handle the English language charmingly. It was gratifying to find the Section so well attended.

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VOL. 28. No. 11 Medical Lib. DEC 5 1921 NOVEMBER 1921

MEDICAL LIFE

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Professor of Medical History
University of Vienna

is now

Contributing Editor of

Medical Life

and writes regularly for this publication

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Editor

MAX NEUBURGER, M.D., Vienna
Contributing Editor

VOLUME 28
NUMBER 11

NOVEMBER 1921

NUMBER FOURTEEN
OF NEW SERIES

Section on Contemporary Medicine

THE MODERN TREATMENT OF GASTROINTESTINAL DISEASES

VII—The Treatment of Constipation

By John L. Kantor, M.D.,

CHIEF IN GASTROINTESTINAL DISEASES, VANDERBILT CLINIC, COLUMBIA UNIVERSITY; ASSOCIATE GASTROENTEROLOGIST, MONTEFIORE HOME AND HOSPITAL

General Considerations; Prophylaxis; Prognosis.—Constipation is either organic or functional in nature. The organic variety, sometimes called obstipation, is by far the less common of the two. It is invariably due to some mechanical cause residing either within the lumen of the intestine (foreign body, fecal impaction), in its wall (new growth, stricture, kink, volvulus, abnormal redundancy) or outside the gut entirely (bands, adhesions, external pressure from exudate, tumor, glands, etc.). As a rule the course of obstipation is acute or rapidly progressive, it demands direct and highly specialized methods of treatment, very commonly surgical in nature, and its detailed discussion need not detain us further except to emphasize again its differentiation from the condition of "true" constipation which we are about to consider.

Constipation properly so-called is always a functional disorder of the intestines. The recognition of this fact is of the greatest possible importance to the practicing physician because it indicates at once, in addition to whatever local measures may be used, the application of those broad principles of therapy that

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are absolutely essential to the successful management of the functional disorders in no matter what part of the body they may manifest themselves. From this point of view the physician cannot fail to take cognizance of such practical and important factors as bad hygienic practice, excessive emotional instability or excitement, and the common triad, overwork, fatigue, exhaustion.

It thus becomes obvious along what lines prophylaxis should be directed. General prophylactic rules for digestive hygiene have already been set forth with the recommendation that they be practiced from childhood. For the prevention of constipation attention should be particularly directed to the first, fourth, sixth and seventh items as enumerated in the first chapter of this presentation. The first rule, *meals should be taken on time,* is important because no regular output of food residue can be expected unless there is strict regularity in the food intake. That the progress of food along the digestive tract takes place according to a very delicate block system is evident from the fact, to cite but a single instance, that the introduction of food into the stomach is followed by the discharge of food from the terminal ileum into the cecum (ileo-pyloric reflex). *The normal dietary should include all the chief classes of foods,* providing for sufficient fats, green vegetables and fruits, because this insures the consumption of those materials most directly required for the normal excitation of intestinal peristalsis. The *drinking of a liberal amount of water daily* (up to two quarts for an adult) aids in keeping the fecal column from excessive dehydration. Finally, the custom must be cultivated, even at the expense of great efforts, of *having a spontaneous bowel movement at regular* intervals, preferably daily. This must be made a matter of absolute habit, so thoroughly ingrained in the personal routine from childhood, that all the subsequent demands of adult cares and business should prove insufficient to upset it.

Assuming then that those who follow the above precepts succeed in escaping constipation, what is the outlook for improving the lot of those who actually suffer from its evils? The prognosis as to cure depends on two factors: first, the length of time the condition has persisted, or what is commonly the same thing, the age of the patient; and, secondly, the degree of cooperation the patient is willing and able to give in carrying out a course of treatment. As regards the latter factor, it need hardly be pointed out that it is much easier to cure even an old patient who is conscientious in "playing the game" than a young one

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who through negligence or some other reason fails to put forth the earnest effort which alone can spell success in the treatment of this condition. In regard to the duration of the disorder, it is equally obvious that the sooner adequate treatment is started the better chance of cure, and particularly is it true that hygienic methods alone (diet, proper habit formation, physical exercise) are more likely to be effective the earlier in the course of the disease they are instituted. In other words, it may be given as a rough rule that persons under 40 or 45 years of age may be cured without the use of cathartics, whereas those over that limit may need temporary assistance of these drugs, or may never be cured in the sense of being able to do entirely without them.

Let us now take up some of the common factors associated with constipation and their treatment.

Body Habitus.—As has been repeatedly mentioned, there can be no question that body habitus exerts a definite influence on gastrointestinal motility. For example, in sthenic (stocky) individuals the bowels normally tend to be free, moving spontaneously up to three times daily. On the other hand, in asthenic (slim) persons the bowels normally move but once a day, or perhaps less often. This is not to say that visceroptosis is invariably associated with constipation, or that constipation in asthenics can only be relieved by correcting the ptosis, or even that correction of the ptosis alone is invariably followed by relief of the constipation. The fact remains, however, that constipation is more common in the one type than in the other, and that correction of the ptosis is always indicated in the treatment of this condition. It is by no means a rarity for the simple application of a snug abdominal binder or corset to cure a constipation of many years' standing. Furthermore, it should not be forgotten that the comprehensive treatment of ptosis implies also the improvement of the state of nutrition with the purpose of bolstering up the intestines from within, as well as the institution of appropriate methods of physical reconstruction wherever possible. For the details of treatment the reader is referred to the chapter on the treatment of ptosis and the asthenic state.

Diet.—Many cases of constipation can be relieved by attention to the diet. The importance of regular eating has already been pointed out. Suffice it here to add that people who "eat out" in restaurants, who travel for business, whose working hours are irregular (and this includes many physicians), are those who are most likely to receive the greatest benefit from a rigid adherence to the rule that all meals be taken on time.

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Another error frequently met with is the consumption of a highly concentrated dry diet. With the exception of an occasional dish of soup or a cup of coffee many persons consume practically no fluids (especially during the winter) from one day's end to another. In such cases the drinking of water on a fasting stomach in the morning and at frequent intervals, preferably before meals, during the rest of the day may be all that is necessary to cure the constipation. The early morning drink is of particular physiologic interest and importance. At no other time during the day are both stomach and small intestine empty. Water passes down the digestive tract quickly under these circumstances, and acts as a markedly efficient intestinal flush and stimulant to colonic peristalsis.

Simple starvation, or at any rate, inordinate food restriction, is also a rather common cause of constipation. The reasons for this are various. In some cases to be sure there is an actual physical cause preventing the consumption of normal amounts of foodstuffs, such as obstructive disease of the esophagus or of the pylorus. Here the constipation is obviously secondary and cannot be cured directly. In other cases there is a dread of eating (phagophobia because of the pain that follows, and this too may have an organic basis. In many individuals, however, various articles of diet are progressively eliminated as a part of a common form of neurosis, or even as an awkward attempt to cure the very constipation that is aggravated in the process. The remedy for this state of affairs is obviously the early restoration of an enlarged dietary. In many of these cases, particularly in those whose digestion is for some reason impaired, the prescription of the *standard bland diet* suffices for this purpose.

It is a matter of everyday experience that certain individuals habitually omit from their diet, in part or entirely, those foodstuffs commonly known to possess inherent qualities of increasing intestinal peristalsis. It is probably fair to say that a very large proportion—perhaps a majority—of cases of simple constipation can be cured by increasing the amount of these substances in the dietary. Such foods fall into the following classes (Hertz):

1. Vegetable foods with cellulose residues, which stimulate peristalsis chiefly by mechanical means. Examples are: All green vegetables, especially spinach and cabbage; asparagus and onions; carrots, parsnips, turnips and artichokes; tomatoes, water cress, lettuce, baked apple with skin; cereals, such as oatmeal, whole meal, bran, graham, rye or corn bread.

2. Fruits, which stimulate peristalsis by their indigestible

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skins and seeds, and by the presence of sugars and cathartic organic acids and salts. Examples are: Dried figs, raisins, prunes, dates, ginger; fresh plums, green gages, peaches; raspberries, currants, gooseberries, strawberries; pears, apples, grapes, oranges, melons.

3. Sugars in the form of fruit preserves, such as jam and marmalade.

4. Fats, which promote peristalsis chemically and mechanically. Examples of common fats are: Butter, which can be used in the preparation of vegetables as well as on cereals, etc.; cream, with sweets and in porridge; bacon and other meat fat, which become liquid in the intestine; finally, olive oil, which may be taken "straight" or as mayonnaise or salad dressing, and which is of particular value in emaciated individuals and in cases of spastic constipation.

In connection with the use of nutritive fats and oils it should be pointed out that their laxative action depends entirely on the unabsorbed excess of oil present in the intestines, and that in order to reach this point relatively large amounts of fats must be ingested, depending on the tolerance of the individual. For this reason this particular form of treatment is contraindicated in obesity as well as in all those individuals in whom even a slight amount of fat is likely to produce attacks of distress or so-called biliousness.

For some reason or other milk is commonly believed to be constipating. To be sure there may be individuals who are rendered costive by this substance, but there are probably just as many in whom it acts as a cathartic. It is possible also that raw milk is more laxative than boiled milk, perhaps because of the greater bacterial content of the former. At any rate there seems to be no good reason for hesitating to prescribe milk wherever indicated in constipation (as in associated malnutrition) unless the patient himself has observed some clear evidence of costive action.

One of the most convenient ways of increasing the cellulose content of the diet is by the use of bran. This substance, which forms the outer capsule of the wheat kernel, has long been successfully used to correct constipation in farm animals. "The dose of bran is a considerable amount: tablespoonfuls rather than teaspoonfuls; two of them rather than one, and taken several times, at least twice daily, best with meals, and indefinitely. We do not have here a cure for constipation in the sense that its use can, after a while, be discontinued. It is generally necessary to

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employ bran as a regular ingredient of the diet; hence the importance of making the patient enjoy its use, and the desirability of making it an integral part of the meals by means of cookery. Among the ways in which this may be accomplished are: graham or whole meal bread and crackers; bran with cream and sugar; bran, mixed up to one-third, with breakfast cereal; bran added to vegetable purees and to fruit sauces; bran incorporated in fish cakes, minced meat, etc." (Fantus). Bran is of course contraindicated in the various irritative gastric disorders and in cases of spastic constipation.

Psychic and Nervous Factors.—The importance of psychic factors in constipation is self-evident. It is a matter of common knowledge that some people cannot possibly have a bowel movement when nervous or worried, or while actively engaged in the ardent and exciting pursuit of their daily occupation. Travel and change of environment, also, are potent causes of constipation in susceptible individuals, as are of course the grosser emotions of fright and anxiety. Anyone who had the opportunity, during the late war, of seeing whole squads of new recruits suffer from a preliminary period of constipation on entering military service will bear witness to the reality of psychic factors. Restoration of peace of mind is the keynote of sound therapy here as in all neuroses. It is in this way that Christian Science cures constipation—an example of not only legitimate but perfectly sound therapeutics.

One of the peculiar facts in connection with constipation is the anxiety with which some individuals regard their failure to secure a daily bowel movement. Not only may an occasional omission be perfectly explicable on the basis of some of the causes just mentioned above, but a regular evacuation every other day for example may be regarded as quite within normal limits when not associated with physical discomfort or disability. Nevertheless the situation may appear so serious to these apprehensive individuals as to lead to increased constipation from anxiety on the one hand or to some vicious habit on the other. In all such cases it is a good practice to supplement a clear explanation of the real state of affairs and a reassuring manner, with small doses of bromides, which are to be continued until the restoration of normal bowel function is complete. As a matter of fact, many patients have been cured by just this kind of treatment without the aid of any other measures whatever.

Fatigue may perhaps also be considered under the head of nervous factors. A sufficient amount of general bodily relaxation

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and rest is essential for the proper functioning of all the organs, and the bowels form no exception to the rule. Whether the fatigue products of metabolism are actually constipating or not, it is nevertheless clinically certain that many cases of costiveness are associated with insufficient rest and particularly with insufficient sleep. This is very often the case in those who work at night, and it may be necessary for such persons to resume the more usual habits of living before a cure is effected.

Vicious Habit Formation.—Perhaps the greatest perpetuating cause of constipation is that of vicious habit formation. Much of the trouble is due to early neglect of the bowels. Getting up too late to have bowels move before rushing to the school, shop or office, and neglecting the calls of nature afterward because of preoccupation, laziness or embarrassment have frequently enough been pointed out as common experiences in this connection. To this should be added the uninviting condition, improper placing or absence of heating facilities, in toilets in the poorer types of schools, shops and tenements—conditions that demand remedy at the hands of the appropriate social, industrial, educational or ad-administrative authorities.

Once the chain of regular bowel evacuations is broken, once the fecal stasis begins to cause discomfort, whether by reflex mechanical, by nervous, or by toxic causes, it is but a short step for the sufferer to seek artificial methods of relief. He embraces thenceforth either the cathartic or the enema habit; or both, and his constipation bids fair to remain fixed for life. Physicians, too, are not without blame in this matter. A prescription for a cathartic, no matter how well fitted to the temporary needs of a patient, may become just as persistently and unintelligently employed as any patent nostrum. Similarly, the administration of cathartics or enemas post-partem or after operations may often be the starting of a vicious habit.

The first and most important step in the treatment of the cathartic or enema habit is the complete elimination of the offending measures. If it is carefully explained to such patients that it will take several days for the bowel to form a normal solid fecal column from its usually watery or mushy contents; that nothing serious can happen during the interval; that even if some discomfort is experienced, it is well worth the trouble for the sake of achieving a permanent cure; if, in short, these patients are completely convinced that they can be cured and that a serious and scientific attempt is being made to do so, most of them will readily co-operate and will refrain from seeking relief in their former

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manner. To be sure, in some patients over 45, and in very apprehensive, unstable and unreliable individuals, such an apparently abrupt and "heroic" treatment may prove impracticable, and one may then be forced to continue the temporary use of cathartics as will be described later. Nevertheless it is really surprising how often a bowel that has been irritated daily for years will take on a new lease of life as it were, and resume its function of delivering formed stools spontaneously within a week perhaps of its escape from medication.

The interval between the discontinuance of artificial aids and the first spontaneous bowel movement is commonly one of some anxiety to the patient and perhaps to the physician as well. All the hygienic aids already mentioned as well as those about to be described should be brought into play, and in addition bromides should be exhibited in order to allay nervous anxiety and irritability during this interval. Most important of all, the patient should begin from the start to cultivate the habit of regular bowel evacuation. Selecting some hour most convenient to himself (but preferably after breakfast), he should try to have a bowel movement at that time precisely, day after day, no matter how long it may take before the regular habit is established. Desire for stool arising at any other than the prescribed time should be absolutely disregarded, for otherwise the bowel could never be trained back into the desired regularity of action.

It may be of interest to point out that the restoration of normal bowel function is ofttimes rendered much easier for the patient when done under x-ray control. It is quite possible that the psychic effect of visualizing the daily progress of the barium-fecal column toward the rectum is sufficient to bolster up confidence in the ultimate successful achievement of a spontaneous bowel movement

Physical Exercise.—In the normal subject the exercise incident to making the morning toilet is frequently sufficient to provoke a desire for stool by breakfast or soon thereafter. In the constipated individual, on the other hand, much more specialized effort in the way of exercise is obviously necessary. The object of such exercise is to strengthen the voluntary muscles of defecation and to cause rapid changes in intra-abdominal pressure. To this end all movements involving the abdominal and thigh muscles are particularly advantageous. Hertz recommends especially the following exercises: hill-climbing, rowing, skipping, swimming, horseback riding, gardening, bowling. He also advocates Swedish movements as follows:

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Lying:

1. Sit up and bring fingers to feet.
2. Raise thighs with legs extended.
3. Draw in and push out abdomen.

Standing:

1. Bend forward with knees stiff and touch feet.
2. Bend to side, touch foot with hand.
3. Hands on hips, twist body around.
4. Lean back and move body about pelvis in a circle.
5. Goose step standing.
5. Hands on hips, up on toes, squat.

Massage is of value particularly where the intestinal musculature is weak. It is best performed by the patient himself rolling a heavy weight about his abdomen. The best time is in the morning before breakfast.

In all forms of exercise the following points are of importance: 1. Fatigue from over exercise is much more harmful than no exercise at all. 2. Exercise must appeal to the patient as pleasant and exhilarating to do any good. 3. A little work done regularly is better than much done sporadically.

(To be continued)

THE MODERN TREATMENT OF VENEREAL DISEASES

VII—The Treatment of Venereal Ulcerations

By Abr. L. Wolbarst, M.D.,

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Treatment of Chancroid

Chancroid, otherwise known as Ulcus Molle, Soft Chancre, Soft Sore, is quite common at times, and rare at other times. In my clinics this lesion seems to run a seasonal course; months may pass without encountering one, and then suddenly a dozen or more patients appear with chancroids.

It is generally conceded that Ducrey's bacillus is the etiologic factor in the development of the soft venereal sore, but it cannot be said that this bacillus invariably is present. The sore may occur anywhere on the body, and experiments have shown that it is autoinoculable. It may be single or multiple. The period of incubation is from three to five or six days.

The chancroid usually takes on the appearance of a true

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ulcer; that is, it has an uneven, purulent base, the walls overhang and are irregular in outline; it does not spread evenly in all directions, and it may heal at one extremity while it is spreading at the other. Around the margin of the ulcer a distinctly inflammatory ring often may be observed, especially about the spreading area.

Lymphangitis and "bubo" are not uncommon. Inflamed inguinal glands may develop on one or both sides, and usually go to suppuration. Months may elapse between the healing of the ulcer and the development of the bubo.

Chancroid and luetic chancre are not in any way related, as far as our present information teaches; nevertheless, they may appear simultaneously and produce what is known as a "mixed infection." Authorities differ on this point, some disputing the possibility of their coexistence, but it is an undeniable fact that typical chancroidal ulcers, associated with suppurating bubo, have been followed by a typical hardening of the lesion and the appearance of secondary luetic manifestations.

Because of the possibility that an apparent chancroidal ulcer may be "mixed" or purely luetic, in spite of its non-luetic appearance, it is well to bear in mind this possibility and therefore consider every penile ulcer as a potential luetic chancre. Serious errors and grave consequences have resulted from the failure to consider penile ulcers as potentially syphilitic. It is not necessary to administer anti-luetic treatment on the appearance of a penile lesion, but it is essential that every possible effort be made to eliminate any possible doubt as to the correct nature of the lesion. This means at least several microscopic examinations of the scraped secretion, both for the Ducrey bacillus and the spirochete pallidum. The Complement Fixation Test is of no value in this connection, because it does not usually appear before six to eight weeks after infection has taken place.

There are several varieties of chancroid, but for the present purpose only the most important will be mentioned. By all odds the most serious type of chancroid is the phagedenic ulcer (Ulcus Molle Phagedenicum). This is not uncommon, being met with in persons who are unclean or below par constitutionally. I have seen them in the uncircumcised as well as in others, thus refuting the general belief that a foreskin and a balanitis are requisites for the development of this type of chancroid. The essential characteristic of this sore is its tendency to spread in spite of any and all methods of treatment. Part of the penis usually is destroyed before the process comes to a spontaneous stop.

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The serpiginous ulcer (Ulcus Molle Serpiginosum) seems to be a close relation to the preceding. This ulcer spreads rapidly and over a wide area, extending over the abdomen to the umbilicus, or down the genito-crural fold to the thigh and the leg. Like the phagedenic ulcer, it generally heals at one point while it is spreading in all its virulence at another. When it heals a typical scar remains behind, resembling that of an extensive burn. These ulcers have been known to remain more or less active for many years, cases having been reported in which the process has been active for over twenty-five years.

The treatment of chancroid in its various manifestations has not been given the serious attention which this lesion deserves, probably because of the tendency towards spontaneous healing often manifested by these lesions. Where there is a tight foreskin and the lesion is situated within the preputial cavity, spontaneous healing, of course, is out of the question. Lesions so situated heal with great reluctance, and it may be stated as a general rule that they very rarely heal without exposure to the air brought on by a dorsal incision or a complete circumcision.

If the ulcer is situated on the foreskin, at a distance more than half an inch beyond the coronal sulcus, it is my invariable practice to urge upon the patient the necessity of an immediate circumcision. In this manner the ulcer is removed at one stroke, the foreskin is removed, and within a week or ten days all trace of both these annoyances has gone forever. Occasionally, if the incision is made too close to the chancroidal area, the circumcision wound may become infected, and within twenty-four hours it takes on the general appearance and characteristics of the original sore. It is my observation, however, that the secondary infection of the wound is decidedly amenable to local treatment, much more so than the original sore. I therefore deem it advisable to excise the ulcer wherever possible, and if circumcision can be done at the same time, I think it is highly desirable, even essential to do so.

In clinics patronized largely by the uncircumcised, chancroidal ulcers situated within the preputial cavity, usually present a condition that is almost unbelievable. In addition to the foul smelling smegma secretion of the cavity itself there is present the accumulated pathologic secretion of the chancroidal ulcer. The combination of these two produces an aroma that is almost beyond description, and constitutes in effect the most potent argument that can be advanced in favor of universal circumcision in all male infants as a prophylactic and sanitary measure.

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Very frequently, in the presence of a tight meatus and a foreskin that cannot be retracted, it is impossible to make a diagnosis of venereal ulcer, but the horrible odor together with the foul discharge emanating from the preputial cavity will readily help to satisfy the physician that there is something within that cavity that does not belong there.

To aid in the diagnosis in such cases it is well to irrigate the preputial cavity with a pointed nozzle attached to an irrigator, until the washings come out perfectly clear. Then the patient urinates into several glasses. If there is no infection in the urethra, the urine thus voided will be clear. We are certain therefore that we are dealing with some extraurethral lesion situated within the preputial cavity. If this voided urine contains pus, there is no way of determining whether or not an ulcer is present in addition to the intraurethral lesion, except by making a dorsal incision and thereby exposing to the eye the entire preputial cavity. In the vast majority of cases when the dorsal incision is made one ulcer or more will be found situated either on the glans, in the sulcus, or on the preputial wall, or in several places simultaneously.

We can thus see that the dorsal incision is indicated not only as a matter of diagnosis, but likewise as a most potent and useful therapeutic agent. The cavity being exposed, it is possible to take such measures as may seem necessary after a careful study of the local conditions. The preputial cavity should be cleansed, preferably with a 2 per cent hydrogen peroxid solution, and the ulcers exposed to the air as much as possible. Healing will begin quickly, unless the ulcers are phagedenic or serpiginous in character.

Once the ulcer has been exposed so that the outer air can reach it, the treatment is the same as that of an ulcer situated on the outer skin. The lesion being purely local in character, local treatment usually is sufficient to bring about a perfect cure. This treatment varies considerably, almost everything in the pharmacopeia and many things not in it having been employed in an attempt to find a specific remedy.

The most popular and generally efficient method of treatment is that of cauterization. Pure carbolic acid, followed by alcohol and a dusting powder applied every day, is the favorite method of treatment at the present day; but this is not always effective, and in such cases one must apply some of the other methods that have been successful at times. Local cauterization with pure carbolic acid followed by nitric acid is a very efficient method, the

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carbolic acid acting as an anesthetic in advance of the actual cauterization by the nitric acid. Before any caustic is applied the ulcer should be dried thoroughly, in order to obtain a better cauterization. Cauterization followed by the application of alcohol, or of a dusting powder like aristol, often produces excellent results. Crystals of pure argyrol deposited on the dried ulcer, and permitted to remain under a loose dressing, is a somewhat recent innovation, but often proves highly useful.

In a recent private case a somewhat elderly gentleman acquired a penile ulcer that resisted all and every kind of local treatment. The physician under whose care he had been for several weeks had resorted to every conceivable remedy; the ulcer not only refused to heal, but it was growing larger and deeper steadily. When I saw it first it was about the size of a half dollar and nearly a quarter of an inch in depth. It had every evidence of phagedena; in addition it gave the patient exquisite pain. Nothing that I used seemed to have any effect on the ulcer; iodid of potassium internally and an intravenous injection of arsphenamine had no effect whatever. As a last resort I made a local application of acriflavine, 1-1000, and this gave an immediate result. Within a week a healthy margin surrounded the ulcer, granulations appeared all over its surface, and in another week the entire area had healed over, leaving almost no scar behind. The sero-reaction in this case has been persistently negative. I have found acriflavine extremely useful in a number of other cases of the same kind.

Cauterization by means of zinc ionization has given excellent results, but its action is uncertain, and its administration takes time and requires special apparatus beyond the reach of the general practitioner. The positive electrode of the apparatus is applied to one buttock. A piece of gauze soaked in a 2 per cent. solution of zinc sulfate is attached to the negative electrode and applied to the ulcer. This is quite effective at times.

Phagedenic ulcers are very difficult to treat. They resist everything that is applied to them, especially pure carbolic acid. In fact it sometimes appears that the carbolic acid encourages the outlawry of the ulcer. The internal administration of large doses of iodid of potassium, even as high as 200 grains daily, will often bring about a cure when everything else has failed. By that time a considerable portion of the penis has been destroyed. In England and Canada, in addition to the potassium salt, intramine, trimine and colloidal iodin are used extensively in the treatment of these ulcers, according to the teachings of McDonagh, par-

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ticularly in those cases which resist the usual methods of treatment.

When lymphangitis occurs, as it often does, no special treatment is required. It usually occurs on the dorsal surface of the penis, but not infrequently it runs along the sides of the organ. Occasionally a little swelling which appears along its course may suppurate and break down, forming a miniature bubo. This ulcer usually heals spontaneously or on the application of a wet dressing, but occasionally it takes on the characteristics and goes through the course of a serpiginous ulcer.

Inguinal bubo, or lymphadenitis, is a very common accompaniment of chancroid. It is so frequent that it cannot correctly be called a complication of chancroid. Strictly speaking, bubo refers to the adenitis after suppuration has taken place. It is extremely painful, and not infrequently is accompanied by constitutional symptoms and marked prostration. The streptobacillus is the active etiologic factor, though the pus aspirated from a bubo may be found to be absolutely sterile at times.

The treatment of chancroidal adenitis or bubo depends on the state in which it is first observed. If it is hard and suppuration has not yet taken place, it may be treated successfully without incision. An application of ichthyol and mercury ointment, about 33 per cent. strength each, retained with a tight spica bandage, will often be all the treatment that is required. An iodin ointment can be used the same way with good effect. In such cases the element of pressure made by the tight bandage is very important, and unless the bandage is put on in such a manner as to maintain a firm and relentless presure on the inflamed glands, the result will not be satisfactory. Very early in the attack an application of tincture of iodin may prove valuable.

When, however, pus forms and fluctuation can be felt, these measures are of no avail. The pus must be evacuated, but in doing so the physician must exercise a due regard for the pathology of the case. In the beginning only one of the glands usually suppurates and points toward the skin. This gland alone should be opened by a small incision at right angles to Poupart's ligament, just large enough to permit drainage of the broken down gland. If this is done properly, the inflammation in the other inflamed glands may gradually subside and pass off. If, however, the incision is made so large as to include the tissue lying between the glands, there is great danger of spreading the infection to the interglandular tissue and other non-infected glands. In other words, the aim of the operator should be to

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confine his incision to the gland or glands that have already broken down or give promise of undergoing suppuration. Glands that feel hard and resistant should be let alone. They will probably return to the normal as soon as the suppurating gland has been opened and drained.

After the offending gland has been incised various plans of treatment may be followed. The abscess cavity may simply be drained by a wick of gauze, preferably iodoform if the odor is not objectionable; a little iodoform emulsion may be injected and permitted to remain in the cavity; the cavity may be swabbed with a solution of phenol, or 10 per cent. silver nitrate, or alcohol, or iodin, and a gauze drain inserted.

If more than one gland has broken down the incision should be larger, and the entire cavity thoroughly explored with the finger for the purpose of locating pockets and breaking them up together with such adhesions as may be found. Drainage and irrigation will be found useful.

In a fairly large number of cases it will be found that the incised wound is very slow in healing. These cases often point to a tuberculous or luetic basis which should not be overlooked. Constitutional treatment is imperative in the management of such cases. When this sluggishness has taken on definite shape, stimulation of the wound surface may be attained by packing the wound with Crèdè ointment. Before this is done, however, the wound should be explored minutely for existing pockets or adhesions, which often act as the only cause for non-healing. The Crèdè ointment will be found extremely useful in cases that seem rebellious to ordinary drainage. Balsam of Peru gauze packed into the wound, not too tightly, likewise is very useful in stimulating granulation of the wound surface.

In any event it is extremely important not to remove all the glands in the inguinal region; marked edema of the corresponding side of the scrotum and thigh may result. I have seen a number of such cases.

It is well to remember, while on the subject of bubo, that there is always a possibility of an obscure and inactive lues being associated with the chancroidal adenitis. In such cases obviously the therapeutic indication is to put the patient on anti-luetic treatment quickly and thoroughly so as to obtain the quickest possible results. Rapid resolution and cure will follow if the luetic condition has been present.

In the rare cases in which the wound takes on phagedenic characteristics, the only treatment which can be expected to suc-

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ceed is to anesthetize the patient, and remove all the necrotic and infectious tissue with the actual cautery and curette. This is followed by hot evaporating solutions and irrigations of iodin or silver nitrate solution.

THE FOURTH VENEREAL DISEASE: EROSIVE AND GANGRENOUS BALANITIS

This condition is often permitted to go unrecognized, especially by the general practitioner. It is a specific infectious disease, having both local and general manifestations. A vibrio and a spirochete are always found in this condition. These organisms have been isolated in the bloodvessels, in the inguinal glands and in sections of tissue.

This condition cannot occur in the circumcised; a tight, long foreskin, which excludes the air, is the most prominent exciting cause; other factors are wetting the penis or labia with saliva and unnatural sexual relations. The organism found is identical with that found in Vincent's angina. Heat, moisture, absence of air and uncleanliness are the most favorable conditions for the development of this condition.

In a marked case of phimosis this condition finds its most favorable development. The sulcus is most commonly affected, next in frequency being the preputial cavity and finally the glans. In severe cases, with a very tight foreskin, the infection may extend into the fossa navicularis.

Its first manifestations are small whitish gray patches in the cavity of the prepuce, at or near the sulcus; these are quickly succeeded by a foul smelling thin purulent discharge, the odor of which has a characteristic and distinctive foulness. The entire glans and preputial cavity take part in the process, and present a horrible aspect in which filthy, purulent ulcerations predominate. Gangrene may supervene in extreme cases. Fever and malaise are not infrequent.

Unless one is on his guard the case may be mistaken for chancroid, but the clinical features together with the microscopic findings will readily clear up the diagnosis.

The treatment is simplicity itself. In mild cases simple retraction of the foreskin, cleansing and admission of air to the preputial cavity will bring about a quick cure. In the more severe cases a dorsal incision and exposure of the infected area to the air is the first step, the infecting organ being anærobic in character. Hydrogen peroxid in 2 per cent. solution is the most effective

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medium for cleansing the cavity and the ulcerated areas; in the vast majority of cases it acts as a specific. If it is deemed necessary, stronger solutions may be used. Cauterization is not desirable in these cases. A dry dusting powder is all that is necessary, after the cleansing has been accomplished.

792 Lexington Avenue, New York.

MODERN CARDIOLOGY

By William J. Cruikshank, M.D., F.A.C.P,

President of the Brooklyn Cardiological Society; Consulting Physician, Wyckoff Heights Hospital.

I—Introduction

In approaching a discussion of modern cardiology the thought has occurred to the writer that in this contribution space might well be devoted to comment on a few of the historical facts, circumstances, discouragements and other things leading up to the development of that branch of medical science. The writer is himself living in full realization that twenty-five years or more of experience in the practice of general medicine has placed to his credit a sufficient number of mistakes to enable him to appreciate the need of cardiological knowledge by the general practitioner. The writer also realizes that the space and time allotted to him does not permit of a thorough handling of the historical side of the question. He will, therefore, in his future communications confine his remarks on the subject to those branches of cardiology which will tend to help the family physician to treat his heart cases with a degree of professional skill commensurate with his earnest desire.

Modern cardiology is based upon certain anatomical and physiological facts which have existed and have been capable of demonstration since the primitive protoplasmic element reached the stage of development resulting in the formation of an embryonic heart and blood-vessels. It was man's misfortune to overlook, for many years, these anatomical and physiological facts.

This slumbering of great truths awaiting man's discovery is not as it should be; there is evidently something wrong in our methods. The question naturally arises, What has been amiss? The fault seems to lie at the very root of our so-called civilization. If man had devoted the time, energy and treasure to the acquisition of knowledge which he has devoted to the study and dissemination of superstition, he would not at this late day of his exist-

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ence find himself placed in the humiliating position of one just beginning to learn something concerning pathological processes occurring in the heart which record a mortality rivaling that of pulmonary tuberculosis. I believe that on this point I am justified in going further. The time, treasure and energy devoted to fostering superstition, if it had been devoted to sanitation and preventive medicine, would have controlled and prevented the birth, growth and further development of the infectious elements largely responsible for the production of heart disease.

The thoughtful physician familiar with collateral history is at last awake to a full realization that, for obvious reasons, the evolution of medical science has been painfully slow and tedious, and he is now thinking seriously along those lines. Some day he will have the courage to give his thought honest and fearless expression and the world will be the wiser and better for it. Primitive man had the necessary courage, but lacked the brains; modern man has the brains, but lacks the courage. However, man should keep up hard thinking and not despair. He may derive some courage from the following: "Obstruction is but virtue's foil, from thwarted light leaps color's flame, the stream impeded has a song." If I might be permitted, just here, to make a personal suggestion to the young physician, it would be this: Remember, *always*, that yours is the most glorious of the professions. Fit yourself for your work by becoming acquainted, not alone with medical history, but with collateral history also. This knowledge will help you to avoid the blunders of mankind which occurred in the past.

Man lives in the meshes of his own mistakes, his real knowledge, for the most part, being initiated by accident. Many of the recognized medical and surgical discoveries are the result of chance or accident, and knowledge of the heart, which has so recently developed into a branch of medicine which may now be regarded as fairly exact, is no exception.

While Harvey's *actual* discovery of the pulmonary circulation cannot be regarded as chance or accident, on the contrary it was the result of years of patient investigation and study (for humanity's sake), but Harvey's attempts to demonstrate this great truth met with so much ignorant and intolerant opposition that its final acceptance became a mere matter of chance, and it is a wonder that the oppsition to it did not bury it alive. As Roswell Park rightly says, "so bitter was the opposition of his contemporaries to the new doctrine that Harvey at one time lost a part of his practice, and was even held to be demented." As a matter of

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fact, Harvey's first publication on the pulmonary circulation had to be made in a foreign coutry (Frankfort, Germany, 1628) because it was not permitted to pass the censorship of England.

Thus through all the ages has man toiled on and on, through the darkness of ignorance, bigotry, superstition, despair and chance; sorrowing, suffering and blundering, now and again, as in the case of Harvey, rising to the sublime heights of a god.

One of the greatest blunders made by man was his childish conception of the shape of the planet on which he lives. The inspired teaching that the earth is flat caused man thousands of years of savagery and barbarism which brought him face to face with fearful physical and mental torture. It deprived him of the benefits of trade and commerce, thrust upon him complete isolation, leaving him to his own local meager resources and surroundings—in short, prevented him from obtaining the advantages of the social, commercial and educational developments of the world. It was this blunder concerning the shape of the earth that misled the great Columbus to such an extent that when, in 1492, he landed at San Salvador, thus discovering a new continent possessed of vast potential wealth, he had no more idea where he was or what he was really doing than he who never saw the sea or ocean. This mistake made by man concerning the shape of the earth so thoroughly blocked all progress that man has not as yet recovered from it. And I believe he has small chance of recovering from its effects until there is a change in his method of teaching. As long as all known facts are purposely ignored and the teaching that man is a separate and distinct creation not subject to the same natural laws as are other forms of life is still insisted upon, he cannot advance to the point of self-reliance and complete endeavor. When man awakes to the full realization that in the scheme of nature the smallest microbe has just as certain a place and just as fair a field as he himself, and that in the inexorable law of reproduction, that law to which all other laws governing life seem to be subservient, the individual is sacrificed in the interests of the species, then, and not until then, may he expect to be intellectually free. Intellectual freedom would result in man's realization of the fact that even though he may be a separate and distinct creation, microorganic life is successfully disputing with him the possession of the earth, and that his weapon to combat that dispute must be organized knowledge, and not organized superstition. Science not only insists, but demands, on the authority of achievement, that man shall not be crucified on the cross of superstition, that cross which he has unconsciously for generations been

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erecting for himself on the golgotha of ignorant darkness. But that instead he shall find his way through the channels of thought, sunlight and energy to the pathway leading to intellectual freedom where he may dwell in peaceful harmony with his immediate surroundings, and at last rest in the Valley of Achievement, shaded by the sheltering branches of the Tree of Knowledge.

But this has been a digression; let us return to the accidental discoveries which have resulted in great things for man, finally reaching those resulting in modern cardiology.

First, as to Newton's discovery of the unchanging law of gravitation, that immutable law which admits of no compromise; the story of the apple falling from the tree to the ground, with which every schoolboy is familiar, can hardly be said to have started Newton's thoughts on the subject, because we know that years of pondering had preceded his chance observation of the falling apple, and we know too that Kepler and others, even Ptolomey, had also thought on the subject. But since the apple story serves to illustrate one of those little things, apparently accidental, occurring in nature which happen as the result of great laws never before understood, it is perhaps in this connection worth while mentioning. Newton was undoubtedly influenced by the observation, for the apple falling from the tree to the ground is, of course, just as much an evidence of the law of gravitation as is the movement of any of the planets, including the one on which we live. Referring to the accidental discoveries which have contributed largely to our knowledge of general medicine and surgery, their name is legion, far too many for reiteration. One or two illustrations will, therefore, suffice.

It was a milkmaid who gave Edward Jenner the idea which resulted in the prevention of smallpox, a scourge which was then devastating Europe. No one now living can realize the calamity, death and human disfigurement caused by smallpox before the days of vaccination. Jenner was practicing medicine in Gloucester, England. One day, while making a professional visit, a milkmaid who happened to be present, referring to smallpox, said to him, "I cannot have the disease because I have had the natural pock." This statement started Jenner thinking and investigating, with the result that on the 14th day of May, 1796, he vaccinated a boy named James Phipps with cowpox virus taken from the hand of one Sarah Nelmes. In due course the boy was inoculated with smallpox, but failed to contract the disease. Jenner's method of preventing smallpox was subsequently developed and gradually adopted, with the result that smallpox is now almost a thing of

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the past. In this way, even in the very teeth of ignorance and superstition, millions of human lives have been saved and fearful suffering prevented—all growing out of the merest accident.

A surgical operation now frequently resorted to for the saving of life and the relief of human suffering is that known as gastroenterostomy. It was first performed by Wülfler, a pupil of Bilroth, on September 28, 1881, in a hospital situated in Vienna, at the suggestion of Nicollodini, Wülfler's assistant. Its performance was a matter of chance or accident, and happened in this wise. Wülfler had opened the abdomen of the patient, and finding an inoperable carcinoma of the stomach prepared to close the abdomen without further interference. Nicollodini, speaking quietly across the operating table to his chief, said, "Why not make a new opening in the stomach, bring up the intestine, stitch the two together, thereby making a continuous new passage?" The suggestion was at once acted upon by Wülfler, and thus, for the first time, by the merest chance, was performed gastroenterostomy.

Speaking about the circumstance attending the first gastroenterostomy reminds me that man knew nothing definite concerning the digestion of his food until after the accidental shooting of Alexis St. Martin, the Canadian halfbreed, whose gastric fistula furnished Beaumont the opportunity of looking inside the stomach and witnessing for himself the process of gastric digestion. Had it not been for Beaumont's observations and experiment (1825), all of which were initiated by the presence of the accidental fistulous opening referred to, we would, in all reasonably certainty, still be groping and stumbling about in the dark trying to glean the knowledge which chance seemed at that time to send; for even after Beaumont's time (1785-1853) until Kussmaul, in 1867, introduced the soft somach tube, little was added to our knowledge of gastric digestion, and even today the mere suggestion that the complaining stomach is usually the mouthpiece of some remote organ practically sums up our scientific knowledge on this point.

The circumstances leading to the invention of the stethoscope, which, by the way, is just now receiving its quota of criticism, were purely accidental. Laënnec, the great French clinician, in 1815, to hear the sounds of the heart more clearly, one day applied a cylindrical roll of paper. Being encouraged by the result, the stethoscope followed. He at first constructed a simple single-tubed instrument, which was in general use until Cammann, of New York, on the same principle, gave us the double stethoscope now in common use.

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Collateral history is replete with instances of man's blundering upon truth, which cannot be referred to here.

Who of us physicians that have lived through the days when there was a complete lack of knowledge concerning the cause of disease, who of us that have lived through the days of venesection, contagious yellow fever, hereditary tuberculosis, membranous croup, jelvic cellulitis, puerperal sepis, typhlitic disease, cholera infantum, dirty surgery and obstetrics, "malaria," laudable pus, uric acid, the withholding of water from patients burning with fever, etc., etc., can doubt my assertion that man lives in the meshes of his own mistakes; that is to say, lives in a house which was built on a foundation of mistaken conceptions of physical phenomena, who of us can doubt that there is still ever present among us a subtle influence call it by what name you will, that overcomes, dwarfs and stunts man's mind, thus preventing him from rising to his full intellectual height; and who of us filled with professional enthusiasm and integrity of purpose that entered the medical profession at its scientific dawn[1] is not profoundly conscious of the fact that in medical matters the public mind during the last quarter of a century has been polluted and stultified by deluded persons, chicanery, quackery and charlatanism in the guise of cults, pathies and practors, whose function it is, unfortunately, under warrant of law, for commercial reasons and dishonest purposes, to lower the standard of medical education, thus tearing down and trampling in the mire of corruption, pretense, dishonesty, commercialism and debasing superstition, that same lofty standard which man, through centuries of scientific endeavor and achievement, succeeded in unfurling for the protection of sick and suffering humanity?

And who of us having within his heart of hearts the slightest impulse of respect for the achievements and traditions of a noble profession, and who of us who having within his mind a single thought for the good of humanity and the public weal does not view the present situation and future outlook with grave concern?

If proof of my assertion that the mental reflections and activities initiating the development of modern cardiology were largely the result of accident is needed, we have only to refer for verification of it to the father of modern cardiology himself. He says: "Shortly after entering general practice I had the misfortune to attend a pregnant woman who died undelivered on account of heart failure. After this melancholy experience I felt that this

[1] The early 80's, when as the result of the work done by Koch, Louis Pasteur, Lister, Semmelweis and other pioneers, bacteriology as applied to the cause of disease was then beginning to be recognized.

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death might not have occurred if I had had a better knowledge of the condition. On studying the literature of the subject I found that sufficient knowledge did not exist. * * * Having had the lack of knowledge forced upon me in this way, I wondered if I could not do something to shed light on the matter. When I started in a somewhat hesitating fashion on this quest, I had no idea where it would lead me. Not only did it bring to light many facts, but it brought to me a consciousness of the deficiency in our knowledge in fields essential to the progress of medicine and a knowledge of methods by which some of these deficiencies could be made good."[2] In this way were initiated by this great teacher certain observations and investigations, both clinical and graphic, which resulted in the study of cardiac irregularities, myocardial function, concerning which at that time the medical profession knew almost nothing, the effects of drugs, such as digitalis, on the heart were studied, and in due time he gave us the ink polygraph; the story of the evolution of which is one of the most interesting chapters in all medical history. Knowledge of diagnosis, and especially of prognosis, in heart disease followed, and modern cardiology was born. The story of its development by Mackenzie and the account of the work in that direction done by the talented cardiophysiologist, Thomas Lewis, which followed should be carefully read by every physician aspiring to cardiological knowledge.

102 Fort Greene Place, Brooklyn, New York, U. S. A.

[2] The Future of Medicine. By Sir James Mackenzie. Chap. III, p. 82.

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OVER THE HILL

To the Editor: A very short story of filial love.

About six months ago a poorly dressed woman 55 years of age, accompanied by a young man about 35 years old, came from South Carolina to see us.

We have never been able to figure out why *she* came, because actually it was the young man who came for treatment. He had a pustular rash, which we diagnosed as syphilitic and advised treatment. But the mother was the one who really piqued our curiosity. Nothing was said by them regarding *her* condition, although actually it appeared worse than that of her son; for extending from the end of the bony septum of the nose and reaching down to and including the alveolar processes of the upper jaw and back for about an inch and a half beyond the face line there was no tissue, merely a dark hole. It was one of the ugliest gummata we have seen for many a year, and while we knew there was no possibility of restoring any of the destroyed tissue, we thought we might arrest the process and give her some ease. Therefore we approached her and asked her if she did not wish to have *her* condition treated. She said *she* wouldn't mind, but would have to see her son about it. So we went to him and put the matter clearly up to him how badly off his mother was and how easily she could be relieved and helped.

But we met a blank wall. His answer was simple and final, and no argument on our part could change his viewpoint. He told us he had just enough money to get treatment for himself, and therefore he could not see how his mother was going to get any. He told her she might just as well go home. She went.

Filial love! There was no way in which we could get treatment for her, as she was a visitor from another state and no hospital would take her in; nor could money be found to pay her board while we gave her free treatment.

HARRY M. ROBINSON, M.D.

405 N. Charles St., Baltimore, Md.

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WANTED—A MASSEUR!

To the Editor: Perhaps you would kindly accommodate me by giving me the title and publisher's name of some book which treats of massage. We have no masseurs in any of our country towns around here, and I would like to procure some book treating of the subject in a practical way.

REV. J. R. KENNEDY.

St. Rose Priory, Springfield, Ky.

[There is such a superfluity of masseurs in New York, most of them engaged in an undignified scramble for a livelihood, that it is delightful to learn there are communities where the masseur would be welcomed with open arms. In all teaming Manhattan is there no sweating competing massagist who wishes to become the sole masseur of Springfield, Kentucky? This is an age of specialization, and we trust that the guiding spirit of St. Rose Priory will not be obliged to divide his time between preaching and rubbing.]

THE ART OF LOVE

To the Editor: In the September number, under a heading that I have copied, Rev. Arthur E. Whatham regrets my unprofessional style of criticising his article on Eroticism in Women. In this he is fully justified. My brusquerie was not meant for his eyes. I had not noted a correspondence department in M. L. and had not expected my letter to get further than the editor. I still feel all that I wrote, but I might have said it more courteously.

The statements against which I protest begin at the middle of page 181. This and the following paragraphs are too long to quote, and readers can refer to the April number. I fully grasp the point made, that most women are more concerned with the amatory preliminaries, more occupied with the psychic than with the physical side of intercourse. In other words, more devoted to contrectation than to detumescence. This is doubtless the case, but it is not desirable. Contrectation is in serious need of extended development; sex congress should be surrounded by every possible detail of cultured behavior, of gentleness, thoughtfulness, lavishment of endearment, everything that will serve to raise it to a plane of beauty and benediction, but it is no place for the introduction of religiosity.

God and God's visible Presence has no place in the psychophysiologic discussion. Sexually speaking, animalism is the basis of harmonious domestic relations, "pure animalism" in the great

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unwashed, a cultured animalism in those into whose lives the worship of Beauty has entered. Sex intercourse ought to be refined and elevated to the highest possible pinnacle in the ethical or esthetic region. I know of no phase in our civilization more pressing, but I am not willing to see this achieved at the expense of woman's full and normal physical sex orgasm in the conjugal act, and any teaching to the contrary is pernicious. If nature be "acting for the best" in allowing the development of physical sex frigidity in the female, offering her as a substitute such sexless psychic delights as her mother, her sisters or her children might furnish, why can't we assume that nature is "acting for the best" in all other calamities she forces on her children?

Briefly, his argument is: Whatever is, is for the best. That nature is in no danger of not securing progeny enough is unquestioned, but surely in our sex life we are concerned with more than breeding. Mr. Whatham protests against the prolongation of the sex act for the accommodation of the slower female "for natural, hygienic and spiritual reasons." Natural reasons is too vague a term to answer. Hygienic reasons should have complete consideration. Spiritual reasons have no place here unless by that adjective he means ethical and esthetic reasons. I don't see how they are thus offended. Such prolongation within reasonable limits is surely preferable to disappointment and disharmony. The normal man is not satisfied with only being permitted the embrace and orgasm; he requires reciprocation, and is the more human the more he requires this.

Mr. Whatham is much more learned in sexology than I am, and I have gladly read all that I have seen of his writing, but in this matter of female passion, of the cruder, coarser, more animal variety, if he prefers these adjectives, I know that he is dead wrong, and if his days were spent in a lawyer's or doctor's office I think he would learn to agree with me.

JAMES W. WALKER, M.D.

Chicago, Ill.

A SPLENDID UNDERTAKING

To the Editor: I enclose check as my contribution towards the Neuburger Fund, and wish you success in this splendid undertaking.

A. J. MAYSELS, M.D.

1221 E. 4th St., Bethlehem, Pa.

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Books reviewed in this department may be ordered either from the publishers or from this office; for the accommodation of our readers, we will send any book, postpaid, upon receipt of the publisher's price.

THE MODERN TREATMENT OF VENEREAL DISEASES

During 1911 there appeared in the International Journal of Surgery a series of articles on the treatment of gonorrhea in the male, by Dr. A. L. Wolbarst, of New York. These articles were later collected into a volume, which we consider among the best on the subject.

A decade later, when we desired a series of articles on *The Modern Treatment of Venereal Diseases,* we naturally thought of Dr. Wolbarst, and fortunately his services were available. Using his former work as a basis, Dr. Wolbarst produced a valuable monograph which has been appearing in our pages since the May issue, the instalments being as follows:

I. The Treatment of Specific Urethritis, Anterior (May).
II. The Treatment of Specific Urethritis, Posterior (May).
III. Complications of Acute Gonorrheal Urethritis (June).
IV. Epididymitis and Gonorrheal Arthritis (June).
V. Chronic Anterior Urethritis (July).
VI. Chronic Posterior Urethritis (August).
VII. The Treatment of Syphilis (September).
VIII. The Treatment of Venereal Ulcerations (current issue).

On account of the high price of printing, it is not our present intention to republish *The Modern Treatment of Venereal Diseases* in book form, but our readers will find the monograph complete in this volume of MEDICAL LIFE. On account of its practical character, and the clarity with which the entire subject is presented, we believe this monograph is worthy of preservation by every practitioner.]

THE NEXT WAR

The Next War, by WILL IRWIN. 161 pages. E. P. Dutton & Co., New York. $1.50.

Will Irwin's *"The Next War"* should be of the highest moment to the medical profession. Fundamentally, the aim of this profession is the alleviation of human suffering and the betterment of mankind's life, an aim which requires patient excavation

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of the roots of things and broad long vision of life to fulfill. In actual practice, a large proportion of doctors lack both and are content to be mere patchers-up. And hence, for example, the thrilling paragraphs addressed to medical students in Kropotkin's *Appeal to the Young,* in which the anarch calls on them to seek out and combat the social causes of human ills have aroused very little revolutionary ardor among doctors. Again, the subject of war, one would assume, would naturally engross the attention of those who are working to improve the aggregate health of humanity. But if the medical profession as a whole has ever sought to prevent these periodic terrific releases of affliction, I am ignorant of it. Will Irwin's book should be in the hands of every doctor.

The next war will see experiments in germ warfare. Nations will strive to infect each other with virulent epidemics. One suggestion is that a disease be located against which the rival nation has no natural immunity, that the bacilli be cultivated to a malignant stage, and that they then be introduced into the enemy's population in all manner of ways, by airplane, insects, etc. Meanwhile inoculation against it has been performed at home. Doctors have fought doggedly against epidemics, but their efforts are likely to be swamped if human agencies turn energetically to deliberate propagation of disease.

Again, Mr. Irwin points out, following the argument of Dr. Starr Jordan's *War and the Breed,* that war, erroneously called "the tonic of nations," is, in reality, a gigantic process of reversed breeding. Conscription weeds out the very best blood of the nations and withdraws it from the function of parenthood. It rejects the less fit and allows their vitiated blood to carry on the human race. It is like breeding horses to a high pitch and then slaughtering the best specimens. This process carried out logically brings us back to the scrubby pair with which the breeding started.

Economically, the cause of medicine suffers because of war. Ninety-three cents out of every dollar paid to the United States government is expended either for past or future wars. Think how cramped the medical experts at Washington are through lack of funds and what medical battles might be won for the race if the United States spent only half of what it does for war in medical research and health campaigns. "It seems to me," says Mr. Irwin, "that whenever we carry out any aspect of modern war to its logical conclusion, we arrive at the ridiculous."

Mr. Irwin writes lucidly, vividly, dispassionately. He is a

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regular, uninfected by socialism, thoroughgoing pacificism or radicalism and, since most of his countrymen are also regulars and esteem him as a star correspondent of the last war, his words should carry far and weightily.

Speculate, if you will, upon the use of Lewisite gas and ray warfare. But, knowing the elasticity of man in confronting horror, the author does not dilate upon that phase. Nevertheless, the last war introduced us to shell-shock, and who knows what psychological disorders may be the aftermath of intensified means of destruction? I am of the opinion that man cannot face the horrible with impunity beyond certain limits.

The economic aspect is compactly treated, and of war Mr. Irwin concludes "we are learning it does not pay. The victor may, relatively, lose less than the vanquished. But victor and vanquished both lose in the absolute. That may be the clinching argument." In another place he says: "Two great tasks lie before humanity in the rest of the twentieth century. One is to put under control of true morals and of democracy the power of human production which came in the nineteenth century. The other is to check, to limit and finally to eliminate the institution of war. This last is more important . . . if war goes on unchecked, following its present tendency, it means the elimination of whole races—always the best races—and the downfall of civilization." There is a closer interrelation of these two problems than Mr. Irwin sees (*vide* Kropotkin's *War and Capitalism* and similar tracts). To the investigation of them I know no other profession so appropriately invited as the medical one.

A minority of people have always opposed war because it interfered with the gracious and intense and adventurous lives they were living. Perhaps the rest who have welcomed war, welcomed war as a relief from their dwarfed and drab existences, can only be won over by arousing their fear. *"The Next War"* may create a mass of fear, though it is ostensibly aimed at common sense. In fact, it is conceivable, as some reviewers have said, that it way play the rôle of Uncle Tom's Cabin for disarmament.

GORHAM B. MUNSON.

HYGIENE OF COMMUNICABLE DISEASES

Hygiene of Communicable Diseases, by FRANCIS M. MUNSON, M.D., Lecturer on Hygiene and Instructor in Military Surgery, School of Medicine, Georgetown University. Cloth, 793 pages, $5.50. New York: Paul B. Hoeber, 1920.

Casey A. Wood took a vacation during 1920, so we find no

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volumes on ophthalmology except C. Sheard's Dynamic Skiametry and Methods of Testing the Accommodation and Convergence of the Eyes. The otologists were not much more prolific, and aside from W. S. Syme's Handbook we find only J. P. Schaeffer's The Nose, Paranasal Sinuses, Nasolacrimal Passageways, and Olfactory Organ in Man. However, we are already so well supplied with admirable manuals in this specialty that annual additions are hardly necessary. In gynecology and in pediatrics there were few new productions, though many will welcome the second edition of Charles M. Green's Diseases of Women, and the third edition of John Lovett Morse's Diseases of Children, both of these being in the Case History Series.

But if the book-makers in the older fields of medicine rested on their laurels, the printer's cauldron was kept boiling in the newer specialties of Public Health, Social Medicine, Endocrinology, Roentgenology, Psychoanalysis and Sexology.

Louis Lehrfeld's Short Talks on Personal and Community Health; Athel Campbell Burnham's The Community Health Problem; J. W. Ritchie and J. S. Caldwell's New Primer of Hygiene C. E. A. Winslow's Healthy Living; Clair Elsmere Turner's Hygiene: Dental and General; William S. Walsh's Yours for Sleep; E. L. Ash's Mental Self Help, and his The Problem of Nervous Breakdown; W. C. Camp's Handbook on Health and How to Keep It; the work on Public Health and Hygiene, edited by William Hallock Park; H. W. Conn's Physiology and Health; Joseph Head's Everyday Mouth Hygiene, and W. Dwight Pierce's Sanitary Entomology are indicative of the veneration in which Hygiea is held.

Dr. Munson has written a "handbook for sanitarians, medical officers of the army and navy, and general practitioners," discussing concisely, and with extensive knowledge, the causes of communicable diseases, infection and immunity, dissemination of communicable diseases, general prophylaxis, disinfection and disinfectants, insecticides, personal hygiene, hospitals, isolation and quarantine, military sanitation, naval sanitation, railway sanitation, municipal sanitation, rural sanitation, sanitary measures following great disasters, sanitary administration, diseases spread by oral and nasal discharges, the fecal-borne diseases, the venereal diseases, the insect-borne diseases, wound infections, diseases spread by infected animal foods, and miscellaneous topics. There is a bibliography and index.

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AN EPITOME OF HYDROTHERAPY

An Epitome of Hydrotherapy, by SIMON BARUCH. Cloth, 200 pages, illustrated, $2.00. Philadelphia: W. B. Saunders Company, 1920.

At the memorial meeting to A. Jacobi, held in the New York Academy of Medicine, the most striking figure was the venerable Simon Baruch, he of the graceful form and the silky white hair. Now that Jacobi was gone, the mantle of his nestorhood hovered over the shoulders of Baruch, but within a short time Baruch followed Jacobi.

Just prior to his decease, Dr. Baruch, who, more than any other physician in this country placed water on the medical map, gave to his colleagues a "last message" in the form of an admirable *Epitome of Hydrotherapy*.

The volume opens with this challenge:

> No remedial agent merits the confidence of the physician unless it fulfils the following conditions:
>
> (*a*) Ready accessibility; (*b*) a rationale ascertained by experiments on a physiologic basis. (*c*) facility of dosage; (*d*) reliable clinical observations.
>
> That water meets all these demands will appear in the following pages.
>
> Water is not only readily accessible, but it may be used in the liquid, solid, and vaporized form, each of which has its therapeutic value, as will be shown.

The author was not an Hydropathist, attempting to erect the entire system of medicine upon water, but he recognized the value of water as a stimulant, as a sedative, as a tonic, as a diuretic, as a diaphoretic, as an emetic, as a purgative, as a promoter of metabolism, as an aseptic and antiseptic, as an antipyretic, as a hypnotic, and as a local anesthetic. In vivid language, with the background of lifelong experience, Prof. Baruch discussed the rationale of hydrotherapy, the physical characteristics of water, shock and reaction, the application of water in disease, the technic of hydrotherapy, hydriatic instalment, lavage, and procedures adapted to such diseases as typhoid fever, sunstroke, pneumonia, pulmonary tuberculosis, neurasthenia, influenza, rheumatism, gout, and neuritis.

One of the most interesting chapters in the book is on sunstroke: "Sunstroke is the only disease in which water is recognized by all authorities as the chief, indeed, the sole remedy. The hydrotherapy of the average text-book is *faulty* by *omission* in other diseases, but is *fatal* by *commission* in sunstroke." After condemning the most recent text-books for their erroneous management of sunstroke, it is piquant to read, on page 198, that

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"the most successful management of sunstroke today was introduced by Paulus Ægineta in the seventh century."

Simon Baruch was born in 1840 and his last testament, *An Epitome of Hydrotherapy,* appeared in 1920. Baruch's name was "writ in water," and so it deserves to endure.

THE TECHNIQUE OF PSYCHOANALYSIS

The Technique of Psychoanalysis, by SMITH ELY JELLIFFE. Second Edition, $2.50. Washington: Nervous and Mental Disease Monograph Series, No. 26.

A number of recent books deal with, or at least touch upon, the technique of psychoanalysis, but no other single work, including Freud's, is so thorough and practical. Naturally the volume in itself is not a *course* in the vast field of psychoanalysis. It is understood that the practitioner who consults it as a manual of preparation has studied the subject well in the various important works dealing both with the theory and practice in their many phases.

The presentation is immensely strengthened by its firm biological foundation. All phenomena are considered, not merely from the appearance of their present state and manifestations, but in connection with the racial past. Physiological factors are always co-ordinated with the psychic, and their inter-relations emphasized so that the human organism is studied as a complete entity.

Of special importance is the chapter which discusses the material that can be analyzed and that which cannot be. The types of patients that it is impossible or unwise to analyze are described in considerable detail. Some pathological cases may be analyzed, not with the idea of doing them any good, but as a matter of scientific interest. Very valuable psychoanalytic material, it is stated, may be obtained from the "ramblings" of a senile dement, or a paretic, but such apply to the interpretative art which may be of service for other patients rather than of value in the treatment of the producer of the symptoms.

There is much of interest in the section devoted to the literature, source and history of psychoanalysis. A wide range of historical, classical and modern writings, in various languages, are referred to, and their psychoanalytic significance is stressed.

The Œdipus hypothesis as a psychological measuring unit is presented at some length. Dr. Jelliffe states that "the Œdipus Complex is an hypothesis, just as the Ehrlich side-chain is an hypothesis, just as all concepts are hypotheses." He gives it a

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broader basis than that generally implied in the "root-complex" terminology. It is a unit of measurement for all psychological situations. Not only the extreme variations, i.e., the abnormal, are measured by this hypothesis, but every so-called normal psychic activity as well.

The discussion on transference and its dynamics, resistance and its mechanism and the socialization (integration) of the personality is replete with practical, constructive suggestions which should prove helpful to any psychological student or practitioner.

WILLIAM J. FIELDING.

Newark, N. J.

MANUAL OF SURGERY

A Manual of Surgery, by FRANCIS T. STEWART, M.D., formerly Professor of Clinical Surgery, Jefferson Medical College. Fifth edition, cloth, 1086 pages, 590 illustrations, $10.00. Philadelphia: P. Blakiston's Son & Co., 1921.

In the preface to the first edition of his *Manual of Surgery* Stewart stated: "The following pages have been prepared for the undergraduate, whose crowded hours demand a manual stripped of verbiage and unessentials, and for the medical practitioner who seeks a guide to present-day surgery."

The plan of the work has been adhered to, and the *Manual*, now in its fifth edition, is a clearly-written, well-printed handbook for the surgical tyro.

MICROBIOLOGY

Microbiology, edited by CHARLES E. MARSHALL, with twenty-five contributors. Third edition, cloth, 1043 pages, 200 illustrations, $4.00. Philadelphia: P. Blakiston's Son & Co., 1921.

"The study of microörganisms," admits Professor Marshall, "flounders in a fog of unsettled ideas for a proper designation. Whether it should be called Protistology, Microbiology, Bacteriology, Mycology, or something else must be left for the future to determine." This undogmatic, open-minded attitude is one of the healthiest signs of contemporary science. Marshall's *Microbiology* is an ably-handled, carefully-edited text-book, discussing in readable language all aspects of microörganisms.

OLD AT FORTY OR YOUNG AT SIXTY

Old at Forty or Young at Sixty, by ROBERT S. CARROLL, M.D. Cloth 147 pages, $2.25. New York: The Macmillan Company, 1920.

A very pious and a very stupid book by the medical director of the Highland Hospital, Asheville, North Carolina. By means

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of such original platitudes as "Be of good cheer" and "The best is yet to be," the author attempts to create an Art of Growing Old.

A publishing house is perhaps under no obligations to explain why they selected a certain manuscript for publication—yet in this instance we feel tempted to ask the Macmillan Company, "Why?"

PSYCHOANALYSIS, SLEEP AND DREAMS

Psychoanalysis, Sleep and Dreams, by ANDRE TRIDON. Cloth, 161 pages, $2.00. New York: Alfred A. Knopf.

The author's previous volume, *Psychoanalysis and Behavior,* was reviewed in our April issue. In the present volume, *Psychoanalysis, Sleep and Dreams,* Mr. Tridon discusses the definition of sleep, fatigue and rest, the flight from reality, hypnogogic and hypnopompic visions, where dreams come from, convenience dreams, dream life, wish fulfilment, nightmares, typical dreams and sleep walking, prophetic dreams, attitudes reflected in dreams, recurrent dreams, day dreams, neurosis and dreams, sleeplessness, and dream interpretation.

The author started his psychoanalytic career as a popularizer and expositor of Freud, but no one who knows Mr. Tridon would expect him to remain a docile disciple. Instead of following Freud, Tridon now evolves his own theories. In the present volume, after a slight dig at his former master for being so "little concerned with sleep and sleeplessness," Tridon propounds his own theory that we sleep in order to dream, and that sleeplessness is due to our fear of dreaming.

Now, we do not object to theories in psychoanalysis, because the entire subject is reared on theories, but it seems to us, André, that a clever journalist like yourself ought to be able to concoct a more attractive theory than that.

PRACTICAL TUBERCULOSIS

Practical Tuberculosis, by HERBERT F. GAMMONS, M.D., Assistant Instructor in Clinical Medicine, Baylor Medical College, Dallas, Texas. Cloth, 158 pages, $2.00. St. Louis: C. V. Mosby Company, 1921.

Dr. J. B. McKnight, who prefaces this volume, writes: "It is the hope of the author that the practical considerations in the different chapters of this small book will tend to help the general physician to be more on the lookout for the practical than the theoretical when considering his tuberculosis patients." Unfortunately, the volume does not contain sufficient practical information to make it of much value.

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SECTION ON
HISTORICAL MEDICINE

An acquaintance with the history of his science is, however, especially indispensable to the practical physician, if he would thoroughly comprehend and penetrate the secrets of his profession. To him, indeed, it is the bright and polar star, since undoubtedly it alone can teach him the principles of a medical practice independent of the currents, the faith and the superstition of the present. Moreover, it offers him as scientific gain, through the knowledge of the past, the measure for a just and well-founded criticism of the doings of his own time, places in his hand the thread by which he unites past conditions and efforts with those of the present, and sets before him the mirror in which he may observe and compare the past and present, in order to draw therefrom well-grounded conclusions for the future.

J. H. Baas.

1921 NOVEMBER 22 Pages

EARLY PHASES OF MICROBIOLOGY

By Max Neuburger, M.D.,

PROFESSOR OF MEDICAL HISTORY, UNIVERSITY OF VIENNA.

Great ideas cast their shadows before them. Scarcely had chemical and microscopical research begun to move its pinions, then problems were set, the partial solving of which has become possible only in our epoch.

As early as the seventeenth and eighteenth centuries the etiological research of infectious diseases played an important part in pathology, and even then an attempt was made to construct therapy upon it. Two tendencies, both proceeding from the view that the infectious diseases are called forth by a poison may be distinguished in that period. The one regarded the pathological poison as a chemical substance (ferment), the other had the conception of small organisms acting as irritants. Only the modern doctrine of toxins succeeded in combining both views into a higher and harmonious one.

The school of the iatrochemists of the seventeenth century declared the morbid causticities of acid or basic kind as ultimate cause of the affections. Fevers were held to be effervescences of the heart blood caused by morbid activity, excepting those like the plague, which were commonly thought to come from alkaline degeneration of the humors. To be sure, there is no lack of con-

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tradictory statements by these authors in so far as many traced the malignant fevers to acids or to mercurial, saline, sulphuric, arsenic particles. These contradictions were a consequence of the circumstance that the old remedies were not dropped, and the explanation of their action was forced into the Procrustean bed of theories. But among these remedies there were some of acid and some of basic reaction; the preference of the one or the other was determined by the opinions proceeding from apparently theoretic considerations. For instance, according to Sylvius de le Boe, the acids in the plague were supposed to be efficacious since the disease was caused by alkaline degeneration of the humors. Ettmueller, on the contrary, who supposes an acid causticity to be the cause, points to the fact that the best remedies are those which, because of their chemical constitution, are adapted to bind and fixate the volatile acid; for instance, sal volatile, camphora, cornu cervi. According to Thomas Willis, the substances which contain a sal volatile or a sal alkali effect neutralization of the acid particles producing the disease; for instance, bolus arminus, while the approved remedies with acid reaction, for instance, Spir. vitrioli, the aceta Theriacalia, prevent the coagulation of the blood or remove it. Salti mortali of the various authors who wished to explain the ancient remedies from the standpoint of their rude chemism are of no further interest here. The significance of this phase of development lies, rather more, only in the circumstance that a chemical combination, the neutralization of the pathological poison, was intended by means of traditional or newly-gained medicines. The general handling of poisons (mercury, arsenic, antimony, etc.) peculiar to the seventeenth and partly of the eighteenth century was to the advantage of another form of etiological therapy, namely, anti-parasite therapy of the infections. This was based on the pre-supposition that infectious diseases are caused by small living beings, vermiculi.

At the time when the world of the microscope began to be revealed, the opportunity appeared to have come to penetrate deeper into the substratum of infectious diseases. The blood, pus, mucus, etc., of the patients were examined, and lo and behold, the secretions and excretions were alive with all sorts of small beings in constant motion which were unhesitatingly designated in a quite general term as little worms, vermiculi. There was no lack of alleged proofs for *pathologia animata;* that is, for the doctrine that most affections, and particularly the infectious ones, were occasioned by vermiculi. Among the representatives of *pathologia animata* in the seventeenth century were, for in-

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stance, the Jesuit Athanasius Kircher, the Leipzig physicians Christian Lange and August Hauptmann and others. As proof of the *contagium vivum* the itch-mite was pointed to in particular, as were also the familiar observations that in febrile conditions little intestinal worms were often passed.

Lange and Hauptmann, who worked in common and deduced numerous other affections, for instance epilepsy, besides all infectious diseases from small living beings similar to mites, consistently used such remedies as served for vermifuga. As forerunner of inner antisepsis, Lange recommended particularly such substances as act against decomposition; for instance, pulvis balsamicus, and all balsamic essenses prepared from resin.

Augustus Quirinus Rivinus, a later Leipzig professor, proceeding from the assertions and observations of Hauptmann, Lange, Borelli, Hook and Leeuwenhoek, and the consideration of certain diseases to which plants are subject, believed it to be correct to trace all infectious diseases particularly the exanthematic ones, to mites. He says: Nothing reduces so quickly and surely all skin affections as the application of such remedies as are known to kill worms and destroy insects—for instance, the fine results arrived at with mercury preparations or oil embrocations, with fumigations, by the internal use of myrrh.

Asafœtida, castoreum, Rad. Helenii, are to be explained only by the fact that the pathogenous vermiculi are driven out by this therapy. A great number of the customary remedies, for instance, most purgatives, especially calomel (which at that time was much used as a preservative from, and cure for, small-pox) was reckoned by Rivinius as among the anti-parasitic curative substances. He justifies the use of rue, valerian root, Radices Cardui benedicti, Centaurum minoris, Aristolochiae, and others, by the circumstance that they had proved their efficiency for worms and moths. Thus, he arrives at the therapeutic principle:

Ea quae adversus exanthemata omnis generis ad-hiberi solent, medicamenta non nisi anthelmintica esse.

Under the dominion of *pathologia animata,* in the seventeenth century, and at the beginning of the eighteenth, all kinds of poisons were used in the therapy of infectious diseases such as are able to expel or kill insects and worms, for instance:

Arsenic, mercury, the Cevennes tree, Indian berries, tobacco, colocynth powder with vermouth oil, hellebore root, etc. Meanwhile medicine had acquired a specific and a genuine antidote in Peruvian bark, and it is comprehensible that this excellent remedy was, in course of time, employed not only in the treatment of

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malaria, but also of small-pox, typhoid fever, dysentery, etc. It was vain to explain the manner in which this remedy acted, whether from the standpoint of the humoral pathologists or from that of the iatrochemists or iatrophysicists. Only one of these explanations is worthy of record here, that which came from English physicians, particularly Pringle, who, in the antiseptic attribute of the Peruvian bark, saw the cardinal solution of the problem.

It is not accidental that English physicians of olden time and of more modern time are acknowledged to have given chief emphasis to the problem of antisepsis. Bacon had already made experiments on decomposition and its prevention by certain substances, pointing out its future importance for medicine and surgery. (Works, London, 1778, Vol I, page 207.)

John Pringle, who deduced a series of affections from a septic principle, made many experiments to test various substances with regard to their antiseptic qualities; for instance, myrrh, camphor, valerian resins, gum, alum, mineral acids, etc., etc. He reported as to the important results in the "Philosophic Transactions," 1750, and alluded to the fact that Peruvian bark is effective in a measure because of its antiseptic power, but that this did not explain the rapid loss of fever, particularly in the case of malaria.

Under the influence of such experiments the old and new remedies were, in future, regarded in the light of antisepsis by Pringle, Huxham, William Alexander, Stone and others. The endeavor was made to enrich the remedial treasures by antiseptic substances of home drugs; for instance, from horse-chestnuts, willow bark, etc.

The almost perfectly reliable effect of the Peruvian bark in malaria stimulated anew the endeavor to discover, in a rational way, remedies for other infectious diseases, which would prove, like mercury and Peruvian bark, to be specifics. A newly-arisen *chemotherapy* especially desired to make small-pox the point of attack. Bohn had already expressed the view, with Helmont as his authority, that by a mixture of mercury and antimony small-pox could be combatted and the fever curtailed. It was Boerhaave, however, who, in 1713, called greatest attention to this idea.

The English physician, Theophil Lobb, made the attempt, with alleged good results, to cut off variola by a mixture containing mercury (Aethiops mineralis). In his opinion mercury destroys the disease particles, and prevents the union with the blood

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particles, or else makes the blood corpuscles incapable of assimilating the varioloid particles, a hypothesis which almost recalls Ehrlich's theory in its method of reasoning.

Besides Lobb, Beloste, Berkley, Rosen von Rosenstein, Medicus, Chr. Ludw. Hoffmann, etc., endeavored to replace the then prévalent small-pox inoculation by chemical remedies.

No unimportant part was played in the second half of the eighteenth and the first decades of the nineteenth century by the anti-parasite therapy and the chemiatric therapy, improved by new discoveries.

The anti-parasite therapy began with Linné, who attributed the origin of exanthematic infectious diseases in particular to mites, but whooping-cough, dysentery, etc., as well. He expected to find the best support of his view in the circumstance that the most approved remedies, for instance, sulphur and mercury, Leda palustris, were anthelmintics. Quite the same conclusion was reached by the Viennese physician, Plenciz, undoubtedly the most radical adherent of the *pathologia animata* of the time. To him the efficiency of mercury and Peruvian bark appeared to rest on their worm-destroying power.

Corresponding to the progress of zoological research, the primitive idea was gradually abandoned that worms, mites, or insects composed the Contagium vivum, and the postulate was drawn that infusoria, the smallest then known living beings, were to be pronounced the excitant of infectious diseases. It is to be connected with this that the store of medicaments was sought to be enlarged by such substances as showed under the microscope to be deleterious to the lowest organisms.

Such experiments were made by the Englishman, King, in 1693, a very early date. He examined, for instance, salt, vitriol, oil, wine, sugar, etc., in regard to their action on infusoria. Hill, Wrisberg, Needham, Spallanzani and others followed him in this direction, the material examined being, for instance, acids, alkalies, sublimates, calomel and camphor.

In the first decades of the nineteenth century Gruithuisen and Schuh, among others, studied the effect of infusoria of various physical agents and chemical reagents, just as at a much later time the bactericidal quality of certain substances was investigated from the same point of view.

Apparently more fertile in this epoch was the direction based on the progress of physiology since the discovery of oxygen, which aimed at nothing less than to make the foundation of all pathology, chemical ideas. Since, as in the time of Sylvius, the infectious diseases were attributed to the predominance of acids

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or alkaline degeneration of the humor, or to the want or surplus of oxygen, nitrogen, or carbon, etc., the etiological treatment seemed to be quite easy and rational, if a chemical substance of contrary reaction was simply administered as antidote. For medical practice, such chemical hypothesis had no unfavorable effect, inasmuch as the antiseptic acids (diluted sulphuric acid, phosphoric acid and hydrochloric acid) were used, preferably internally, and included disinfecting, fumigations, and washings in the group of external remedies.

Thus, in the first decades of the nineteenth century there came into consideration washing with chlorine water, vinegar and sulphuric acid, for measles, small-pox and typhoid fever, and fumigation with chlorine water for diphtheria, as local disinfecting treatment, in a wholly rational way, combined with the internal use of calomel, antimony, carbonic ammonia, sulphur, etc.

In the degree that favorable experiences were made with alkaline as well as acid drugs, and it was, moreover, recognized that the chemical nature of the pathological poison could not be deduced from the chemical reaction of the saliva, pus, mucus and perspiration, the chemical theory lost in prestige. But the drugs which came into use under its dominion remained permanently in the pharmaceutical stores as disinfecting remedies, so far as they had proved efficient, and without regard to their chemical reaction. In this respect the German physician, Gottfried Eisenmann, as early as 1835, stated it to be one of the physician's principal duties to render the disease poison, which he imagined to be composed of proto-organisms, harmless, if possible, by a depoisoning therapy, by means of disinfecting remedies. Just as Eisenmann even before Henle defended the doctrine of Contagium vivum, he also defined the main principle of internal antisepsis in the words: "Choose remedies which endanger the diseased organism as little as possible, but exercise a deleterious influence on the pathological poisons."

The ways to such a therapy are clinical observation and experiment. "We can," says Eisenmann, "examine, by means of a microscope, which substances in relatively smallest quantity destroy the wounds of the Contagium, and make their organic form dissolve, and then we can control the experiment by means of vaccinations with the disinfected Contagium." But the time was not yet ripe enough; it was only after three decades that the spirit of science was so far prepared by an overwhelming array of facts that ideas and problems such as those formulated by Eisenmann were no longer found irrational, but slowly converted into reality.

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MEDICAL EDUCATION IN CHICAGO IN 1882 AND AFTER

By Bayard Holmes, B.S., M.D.,

Professor of Surgery, College of Physicians and Surgeons, Chicago, 1895-15. Secretary, Association of American Medical Colleges, 1894-1902. Secretary, Chicago Medical Library Association, 1891-3.

V—Medical Libraries in Chicago.[1]

In the autumn of 1885 I took my credentials, i.e., my diplomas and examination reports, to the secretary of the College of Physicians and Surgeons and matriculated and paid my fees. The secretary promised me that should I pass examinations in materia medica and therapeutics under Professor Curtis and in obstetrics under Charles Warrington Earle at the Christmas examinations, I would be allowed to enter the examinations for graduation in the spring. This meant, though it did not so state, that I should be given credit for time spent, work done and examinations passed in the Chicago Homeopathic College on all subjects except materia medica and therapeutics and the work of the graduating year. At that time this action of the secretary of the College of Physicians and Surgeons was unprecedented. No regular school had been accustomed to give any credit for time or work done in a Homeopathic or eclectic school. This letter was novel and as I found later unauthorized by the faculty. Nevertheless I went on and did my work as interne on the homeopathic side at the County Hospital, and also attended the senior lectures at the college, which was across the street.

At Christmas time the first show of danger appeared when Charles Warrington Earle refused to admit me to his examination in obstetrics. He was fat and good-natured, and was easily won over when I showed him the secretary's letter. These Christmas examinations were fair and easily passed off.

Dr. Nicholas Senn, of Milwaukee, had just been appointed Professor of the Principles of Surgery in the College of Physicians and Surgeons, and he came to Chicago every Friday afternoon and gave a lecture, as I remember it, that afternoon and evening. He sometimes kept his class until eleven o'clock at night. It happened that my growing bacteria were the only ones that he had ever seen raised directly from the abscesses and wounds of patients. During the winter he invited me to go home with him to Milwaukee, and there I saw his enormous collection of medical books and got my first idea of medical literature.

[1] The previous instalments of Dr. Bayard Holmes's educational autobiography appeared as follows: I—Ragweed Time (January); II—Choosing a Medical School (February); III—The Old County Hospital (April); IV—The Cook County Hospital in 1884-5 (August).

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Senn was a persistent quiz master and untiring reader. His lectures as given at the College of Physicians and Surgeons that winter were published the next year or two as his Principles of Surgery. It pleased me greatly to spend a week end with his family and see how the great man lived at home. His wife was a genial and efficient woman with a sense of humor that her husband did not possess. His older son, Emanuel, was then in the high school and didn't like it. William was playing the fiddle and no one liked it except his father, who thought any note his son wrung out of the Stradivarius was ecstatic.

Senn lived the simple life at that time. He had come up to Milwaukee from a little town in the center of Wisconsin, where he had commenced to practice medicine. He had bought a fine old mansion in Milwaukee of the vintage of 1865, but the foundations of this structure were not equal to the carload after carload of books he placed on the walls of every room and hall—the kitchen and a few bedrooms alone excepted. Great rents broke the plaster here and there as if the place had been bombarded, and supports filled the cellar, reminding one of a coal mine. Senn's office was down town, on the second floor above Schorse's drug store, and it resembled a free dispensary in every respect except that it wasn't entirely free. The dressings were antiseptic, with accent on the anti. Sublimate and iodoform were relied upon, regardless of the patient's prejudice. It was a busy place, and the assistants got their orders fast and so did the patients. There were crowds waiting when he came in at seven in the morning.

Senn had but one means of conveyance at that time, a favorite mare he had brought into the city, and a remarkable side spring buggy, the like of which is absolutely unknown to the present generation. After dinner, about six p.m., at which there was plenty to eat, but only soup, meat and dessert with a small glass of red wine, Senn went to the County Hospital, three miles or more to the west, with the old mare and buggy. Connell was there and had the dog operating room ready for the lateral anastomoses which were then going on. On the way out to the County Hospital Senn told me all about his great thesis on the intercapsular fractures of the femur, read before the American Surgical Association, and his later theses on Pancreatic Cysts and the Healing of Arteries. He was now working on intestinal surgery and had gotten off two sections of it, one on the rectal injection of hydrogen gas for diagnosis of perforation and one on the lateral anastomosis. His enthusiasm was inspiring and

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his egotism unmeasurable. He was an ardent admirer of Ogston, Rosenbach and Koch.

It would not be out of place, but apropos of this trip and the old mare, to repeat a story told me of Senn by Dr. Hilmantle, who was his assistant and admiring student. They were driving home together from a seance with the dogs at the County Hospital one dark night and were passing over this same turnpike with the old mare and buggy. Senn was a careless rather than a reckless driver, and this turnpike was narrow and fell off into a rocky ditch ten feet or more below on both sides. They had had some troublesome experiences with the dogs and Senn was driving faster than usual in spite of the inky darkness, when suddenly the mare shied and the buggy tipped over, throwing Senn and Hilmantle to the bottom of the embankment. Hilmantle was young and light and soon assisted his superior to find himself. Senn would not move until his assistant had examined his legs to see if there was possibly an intercapsular fracture of either femur. When assured that these bones were both intact he got up and stamped about a little and cried out, "Thank God! There is no surgeon in America who knows how to treat an intercapsular fracture of the femur except myself."

Senn took infinite pains to show me just how the anastomosis was made with his bone plates, and also just what the results were at the end of several periods of time. Connell, the father of our surgeon at Oshkosh, Wisconsin, was a devoted admirer and helper of Nicholas Senn, and he deserves much credit for the success of these experiments that so forwarded American intestinal surgery and gave an inspiring example of the possibilities of single-handed research.

At the spring examinations of the College of Physicians and Surgeons I was not allowed to participate. In fact I was excluded in spite of my letter, the receipt for my fees, and the fact that Dr. Senn had awarded me his prize of a $100 case of surgical instruments. I took my letter to the president of the college, Dr. A. Reeves Jackson, the "doctor" in "Innocents Abroad," but there the letter was lost, though I still had a photographic copy. I was allowed to come before the whole faculty at a meeting which was held at the old Sherman House the night before graduation day, but my plea to graduate was denied, and the case of instruments was kept back in the safe of the college, and though I was afterward clerk and secretary of that institution for seven years the instruments were never given me.

Dr. Christian Fenger followed me out of this meeting, and

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he swore in several foreign tongues and spit in vernacular Danish as he stood up at the bar in a new sealskin overcoat Senn had just given him and drank an old-fashioned toddy with me, and at the same time engaged me to be his assistant the coming year. This consoled me, and every morning thereafter for more than a year I was in his basement office on Ohio street, near Clark, at eight-thirty o'clock, and worked often until eleven o'clock at night, without monetary consideration, but with the greatest devotion and affection and the greatest profit to myself.

My first article in a medical journal was published with Dr. Fenger as co-author. It was translated rather than abstracted and published in the first volume of the Centralblatt für Bacteriologie. Though my first idea of the extent of medical literature was obtained from Dr. Senn and his enormous collection of books, my idea of the methods of studying medical literature came from Dr. Christian Fenger and his compact little library. Most of his books were unbound. He had no catalogue, but he was the librarian, the teacher and the fellow student.

Early in my assistantship with Dr. Fenger I attended the Chicago Gynecological Society, which met in one of the parlors of the Grand Pacific Hotel, to present some bacteriology. W. W. Jaggard was the permanent secretary and editor. Through his intimate acquaintance, at his invitation I read several papers before that society before I had graduated at a regular college and while I was still technically a homeopath, and some two years later became a member of this exclusive society, and was for a time its pathologist. It was largely through Jaggard's influence and guidance that I succeeded in graduating in the spring of 1888 at the Chicago Medical College. My practice that year was very profitable for a beginner.

I had three cases of typhoid fever in one family and was able to trace their source to a case in the same house the previous year. One other case of typhoid was in a relapse, and on opening an axillary abscess the relapse terminated suddenly. I proved by cultures that the abscess wasn't due to typhoid bacilli. My first paper before the Chicago Medical Society was based on this and other cases, and was entitled "Secondary Mixed Infection in Typhoid Fever." It received unusual notice by the medical press, and several very distinguished physicians from a distance wrote me congratulatory letters. Dr. Henry Gradle complimented me in the discussion, and that night we began a delightful scientific and personal acquaintance.

The Chicago Post Graduate Medical School was organized

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in 1889, and I was made editor of their journal, the North American Practitioner. There was an editorial column and a series of book reviews. This gave me an opportunity to express my opinions and aspirations, and sometimes to make enemies "unbeknown to myself." The late Surgeon General Hamilton, of the Marine Hospital Service, was one of these friendly enemies. There was no reason for it so far as I knew then or know now. We were always on the opposite side of every question. This medical journal was at the bottom of it all, and I was very humble after he got through describing me and my lack of literary taste or ability at the banquet given the medical editors of Detroit by Mr. Davis, of the Parke Davis Company. Certainly I felt bad about it, but was never able to get together with him, though I often tried. Because our pathology and surgical methods did not agree was not at the bottom of it, but apparently a certain difference in the philosophy of life and the manner of expression.

THE MEDICAL LIBRARY

There was a committee of the Chicago Medical Society on "A Medical Library," and without solicitation on my part they put me on this committee. Chicago was then without any medical reading room or medical library. The exchanges came to the Journal of the American Medical Association, which was edited by Dr. N. S. Davis in his own private office. One other medical journal, The Chicago Medical Journal and Examiner, had a liberal supply of exchanges. There were a lot of old medical books in the Chicago Public Library, which had been donated by various medical organizations. Dr. Poole had just left this library for the Newberry Library.

After talking the matter over with Dr. N. S. Davis, Dr. Hosmer A. Johnson and Dr. Ephriam Ingals, we organized the Chicago Medical Library Association, got a charter, and published our plan. It was our notion that a meeting place for medical societies, a library and a medical club could be combined as at the Academy of Medicine in New York and the Boston Medical Library Association. We got a column notice in the daily papers, and then started out to get subscribers to membership and to a building fund. The reports of our progress were published from time to time, when suddenly the whole project was terminated by the offer of the Newberry Library Trustees to take over the whole library portion of the project.

We had already bought the James S. Jewell library of the estate. Dr. Ludwig Hektoen and I had put up the money for this

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purchase before the Association had a cent in the treasury. Two Library Accession Books had been made for the Association. These and forty cases of books, estimated at 20,000 bound volumes and many reprints, were after due formality on the part of the Chicago Medical Society, the Chicago Public Library and the Chicago Library Association turned over to the Newberry Library. The Chicago Medical Library Association came to an end. The records and papers of the Association were placed in the Chicago Historical Society's collection, and the report of Dr. Ephriam Ingals, the treasurer, was published in the North American Practitioner, together with a receipt from the Newberry Library trustees.

On the division of the library field among the libraries of Chicago, the John Crerar Library took science and medicine, and bought the Newberry Medical Collection. It received about the same time the Nicholas Senn collection of some 50,000 volumes and a most valuable lot of theses and the library of Henry Gradle on ophthalmology, thus putting at the service of Chicago the second or third most complete library in the United States.

The great advantages which the medical profession have at their disposal in the John Crerar Library, absolutely free, are the current literature in medicine in all languages, the literature of the ancillary sciences, the unusual efficiency of its management, the remarkable facilities of its interlibrary exchanges, and its central location. It seems likely that the methods of instruction in the medical schools of Chicago will soon be enriched by the dethronement of lectures, the catachismal quiz and the substitution of the thesis. This advance would be impossible without a great central medical library, or if not impossible, then very much more difficult and very much less cultural.

No one can appreciate a library of medicine at his hand as we of the 1880's do, who had to make a journey to Washington to complete the reading of a subject under investigation.

When I became secretary and manager of the College of Physicians and Surgeons, in 1891, there were some 1,500 volumes locked up in black walnut book cases and termed the A. Reeves Jackson Library. I hired a graduate librarian, Miss Dickinson, got carpenters to make open book shelves, and started out a real library which has grown into a creditable collection.

80 N. Michigan Ave., Chicago.

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FIFTY YEARS IN MEDICAL HARNESS, OR THE STORY OF A COUNTRY DOCTOR

By Charles Beneulyn Johnson, M.D.,
Author of Medicine in Champaign County, Muskets and Medicine, Illinois in the Fifties.

II—In and About the Medical Ampitheatre

With a prudent desire to hold expenditures within bounds I made some inquiries relative to costs, and learned that as a non-resident of Michigan I would have to "put up" ten dollars! Think of it! Ten dollars for the privilege of attending a six-months' course of lectures, given by one of the ablest faculties in the country! Had I been a native of the state I should have gone "Scott-free!"

Later I went to the Medical Building for the purpose of matriculating, and where a blank was handed me by Professor Douglas to fill out. This included such common-place questions as my name, place of residence and date and place of birth, all of which were duly answered. But when I reached the last query, namely, the name of the institution from which I had received my preliminary education I was a little embarrassed. Professor Douglas, who passed on these questions, looked stern and uncompromising; but finally I "got my nerve" and wrote in its proper place Pocahontas Academy. Pocahontas Academy of Pocahontas, Bond County, Illinois, was started under that name more than two generations ago, but with the coming of "free"-schools in the mid-fifties was merged in the local district school, and it was there I had acquired my knowledge of the supposedly essential three R's, to which was most fortunately added a little smattering of Latin, chemistry, physics, algebra, geometry, etc. These higher branches were taught in this village, or district, school, in the building previously known as an academy, and indeed long retaining that designation, so that at the very worst it was a very white lie that I told when I gave "Pocahontas Academy" as the institution in which I had been educated and claimed as my Alma Mater. (See "Illinois in the Fifties," by the author.)

Having completed the filling out of the blank I handed it back to Professor Douglas, who looked it over without comment and gave me seat numbers in the two amphitheaters, where the entire six months of medical instruction was to be given.

This much accomplished, I was made to realize that I had crossed the threshold of one of the most important departments of the great University of Michigan, then as now one of the most particular institutions in the country relative to the character and

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attainments of its students. But the reader must bear in mind that the above experience dates back to October, 1866—in the Civil War era.

If I remember correctly I became a full-fledged medical student on a Saturday, and as lectures were not to begin till the following Monday I spent some hours looking over the Medical College Building, which was a two-story structure with a large basement. There were double doors on the north, and through these the students passed, and turning either to the right or left found an enclosed, narrow stairway that led to the second floor, where was the lower amphitheater from whose rostrum were to be given lectures on Practice, Materia Medica, Obstetrics, Gynecology, Chemistry, etc. As I recall there were no chairs for the students, but long, circular and not uncomfortable seats rising one above another in regular amphitheater style.

Next to two of the outside walls were narrow, enclosed stairways that led from the rear of the lower amphitheater to the one above. This was arranged very much like the one below, and in it the lectures on surgery and those on anatomy and physiology were always given. For the anatomical lectures a cadaver was nearly always in evidence, and was conveniently placed on a revolving table in the center of the rostrum. The few original operations that the contiguous rural population supplied were always performed in this, the upper amphitheater.

In each of the amphitheaters, if my memory serves me well, was a small projecting stage or platform facing the seats. This we were told was for the janitor to come out upon from time to time and make a record of such seats as were not occupied. As all the seats were numbered this was well calculated to keep "tab" on each student's attendance. But as matters turned out I never saw our monitor on either of these stages but once—a tribute, no doubt, to faithful attendance upon the part of the medical student-body during the winter of 1866-7.

Opening out of each of the amphitheaters were the usual professor's rooms and such other apartments as their needs called for. One large room in the building was devoted to anatomical preparations and pathological specimens. And here I saw for the first time, with not a little loathing, French preparations in wax representing among other things the ravages of both the *big* and *small*-pox.

Not far from the medical college building was a one-story structure, medium in size, that housed the Chemical Department of the University of Michigan, and which was said to be the most

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ABRAM SAGER

ALONZO B. PALMER

complete in its way of anything in the country. Each medical student before graduation was required to do a given amount of work in the Chemical Laboratory.

Having thus matriculated, registered as a student in the medical department and looked over the several localities about which my winter's work would center, I imagine that I felt much as the Man-of-War's Man does when the deck is cleared for action with the enemy in the offing. In other words, I believed I had gotten everything out of the way that could in any degree mar the measurably intelligent state of mind with which I hoped to begin attendance upon the forthcoming course of medical lectures.

The introductory lecture of the course was given by Professor Douglas of the Chair of Chemistry. I cannot recall any fact connected with this lecture save the kindling of the speaker's eyes when, with no little emphasis, he referred to the fact that no

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less than 525 students had recorded their names in the Medical Department of the University of Michigan, which made it "the largest class that had ever been assembled on the American Continent!" And, will the reader believe it, to teach this more than one-half thousand young men there were just six full professors, one assistant professor and one demonstrator of anatomy! Today it is a poor medical school indeed that has not a corps of at least one hundred professors and instructors. In fact, many of them have from one hundred and fifty to two hundred teachers of one kind and another. In the old days one man would give instruction in two or more branches; today three or four men divide one branch between them.

Perhaps there is no place better than this to give the personnel of the medical faculty of the University as it existed in 1866-7.

ABRAM SAGER, A.M., M.D.,
Professor of Obstetrics and Diseases of Women and Children.

SILAS H. DOUGLAS, A.M., M.D.,
Professor of Pharmacology, Chemistry aad Toxicology.

MOSES GUNN, A.M., M.D.,
Professor of Surgery.

ALONZO B. PALMER, A.M., M.D.,
Professor of Pathology, the Practice of Medicine and Hygiene.

CORYDON L. FORD, A.M., M.D.,
Professor of Anatomy and Physiology.

SAMUEL G. ARMOR, A.M., M.D.,
Professor of Institutes of Medicine and Materia Medica.

ALBERT B. PRESCOTT, M.D.,
Assistant Professor of Chemistry and Lecturer on Organic Chemistry.

WILLIAM LEWITT, M.D.,
Demonstrator of Anatomy.

Six full-fledged professors; one assistant professor, and one assistant (or demonstrator), whose duty it was to demonstrate anatomy! Such was the equipment of one of the highest class and most up-to-date medical schools of fifty years ago.

Here a few facts relative to the personnel of our teachers at Ann Arbor may not be out of place.

Dr. Abram Sager, the first man of the list, was a very scholarly man, but if the truth must be told, an uninteresting lecturer. He was tall, slender, was always genteelly dressed, never in any particular violating the proprieties in word, deed or implication. In other words, he was a perfect gentleman, but seemed to live within himself, and was not one who could get close to and become popular with the students.

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SAMUEL G. ARMOR

SILAS H. DOUGLAS

Professor Douglas, who taught us most of our chemistry, was a man of sturdy build, had very dark complexion, coal black eyes, and the blackest of black hair. He was a forceful speaker, and managed to make the usually dry subject of chemistry interesting. The revelations of the solar spectrum were then a new thing, and to these Professor Douglas not unfrequently referred, and always in an interesting and sometimes striking manner.

Dr. Moses Gunn, who taught us surgery and upon Wednesdays and Saturdays operated in the amphitheater, was a gifted man and a most excellent teacher. He was a skillful operator, and used the knife with a dexterity little short of a juggler. He was, furthermore, an ambidexter; that is, could use the knife in either hand, and was never happier than when performing the most difficult and complicated operation. The late Dr. J. B. Murphy, the famous Chicago surgeon, told me one day that Dr. Gunn was the most skillful operator he ever saw use the knife.

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In the amphitheater Dr. Gunn sometimes appeared a little pompous and autocratic, but socially he was one of the most agreeable gentlemen one could meet. Dr. Gunn always spoke to the point. However, one of his definitions was a possible exception and was as follows, "Pus is dead blastema." As it was before the era of the germ theory of disease, it is no reflection on the intelligence of the profession of that day to say that no one knew the true nature of pus, and Dr. Gunn's definition was in no sense enlightening. Blastema is defined to be formative or embryonic tissues, and why Dr. Gunn should have regarded this when in a lifeless condition as the sole and only source, or rather the very essence, of pus is hard to understand.

One day the president of the university came into the amphitheater, accompanied by the famous orator, Theodore Tilton, who had lectured the night before. Dr. Gunn was just nearing the close of a lecture on fractures, and among other things spoke of fracture of the bones of the pelvis, and when it came to the treatment of this trouble he said: "Gentlemen, do that thing which is always the hardest thing for doctors to do—*do nothing!*"

When Dr. Gunn sat down there was an earnest call for Theodore Tilton, and in response he rose to his feet and beside him an ordinary man looked like a pigmy, for he was full six feet four inches in height. When he had looked around for a moment he said: "Gentlemen, I am glad to have the privilege of looking in your faces, and was interested in what Dr. Gunn had to say, and more especially by his telling you that when there was nothing to do to do nothing. I shall profit by his suggestion, for having nothing to say I will just say nothing." With this apt turn at paraphrasing the words of our teacher he sat down amid hearty cheers.

Dr. Alonzo B. Palmer was in the prime of mature manhood, and always came in the amphitheater immaculately dressed. In the delivery of his lecture he had a very earnest manner and seemed especially well versed in practice and pathology. During the course there never failed to be an annual tilt over Dr. Gunn's definition of pus. Dr. Palmer would severely criticise this and in its place offer a definition of his own, but this was so diffuse that it was lost on most of the students; while Dr. Gunn's "Pus is dead blastema," to say the least, had the merit of conciseness.

Dr. Corydon L. Ford, who taught us our anatomy and physiology, was in a class by himself. He could pick up a dry bone and in three minutes have hundreds of wide-eyed, open-mouthed hearers intently attentive lest they would miss a word, such was

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MOSES GUNN

CORYDON L. FORD

his power over an audience. Dr. Ford had the happpy faculty of telling just enough about the subject he had in hand to interest and fix the attention of his listeners. His admirers claimed for him the distinction of being the *best lecturer on anatomy in the world,* and, so far as I know, no one ever came forward to dispute the claim. When a child Dr. Ford had been the victim of hip-joint disease, and this left him with one leg shorter than the other, consequently he wore a very high-heeled shoe and used a cane in walking. In delivering his lecture he would grow weary of standing, and would rest his tired limb by leaning against, or even sitting on the edge of the table that always stood in the center of the arena. At the best he invariably came in the lecture room limping and leaning heavily on his cane. But so fond were the students of him that his very infirmities came to be almost admired. He, moreover, had the profound respect of all, and no one would dare take liberties with him. It was the custom to

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hand down question and some of these were at times the reverse of respectful, but none of this class were ever put in Dr. Ford's hands to be answered by him. All his time was devoted to lecturing, and besides Ann Arbor he delivered each year a course at Long Island, N. Y., and one at Berkshire College, Vermont.

In describing a muscle, nerve, blood vessel or other part of the cadaver, he would place the handle of his scalpel on the object he would desire us to see, and then turning to his listeners and scanning them closely he would pronounce the words, *"Knife on it."*

Once while Dr. Ford was lecturing there was some kind of a noise from somewhere among the students in the amphitheater. The speaker instantly stopped and such a look as he cast in the direction from which it came, with his steel-gray eyes, I shall never forget. Instantly there was silence that was almost painful, and you could have almost heard the fall of a pin.

Dr. Samuel G. Armor, Professor of Institutes of Medicine and Materia Medica, was of the intellectual type. He was tall, finely formed, had a high forehead, was dignified in manner and made the impression of being one of Nature's noblemen. He, furthermore, had a fine voice, spoke with deliberation, always had his subject well in hand, and never failed to be listened to attentively. Dr. Armor had the literary instinct,[1] and sometimes deftly sandwiched in some bright saying or apt expression outside the usually dry and matter-of-fact medical field. Moreover, on occasions he could wax eloquent on his own account. Once when I knew his next topic would be Stramonium, I luckily found a dried seed-pod of the plant (commonly known as Jimson weed); this I placed on the table by the side of which Dr. Armor stood while

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[1] W. J. Conklin writes that Armor "was immensely popular in college and one of the finest lecturers to whom I have ever listened. His graceful delivery and modulated voice, the rounded sentences of pure English, and a wealth of illustration enabled him to breathe life and beauty into the driest of medical themes and to enthuse the dullest of students."—Kelly and Burrage, *American Medical Biographies*, 1920.

The following is a specimen of Armor's eloquence: "It is a curious phase of mental philosophy, that innate differences of intellect—the comparative strength of the reasoning, perceptive, or imaginative faculties—govern their owner in the choice of a medical system. It has been said that seven-eights of the followers of Swedenborg are also devotees of Hahnemann, and all must have noticed a similar proclivity in Spiritualists of the present day. It is, at any rate, sufficiently evident that medicine is not exempt from the influences which govern systems of belief. An important inference may be reached from this view of the question,

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lecturing. Coming into the amphitheater a little later his eyes sparkled as he noticed the simple specimen. His lecture had not proceeded far when in kindly voice he said, "Some gentleman has most obligingly furnished us a specimen of the seed-pod of the plant we are considering today." Simple and common-place as was the whole proceeding, it served to show that he was a true gentleman at heart, and, furthermore, that he had been country-raised.

Dr. Albert B. Prescott, Assistant Professor of Chemistry and Lecturer on Organic Chemistry, was then quite a young man, but was considered very promising. Organic chemistry in that period was a relatively new science. Dr. Prescott was a lame man and always walked with a crutch under one arm.

Dr. William Lewitt, Demonstrator of Anatomy, was a suave gentleman, medium in stature, always dressed in a neat business suit, and was at all times helpful and obliging to students.

So much for the faculty of one of the most progressive and up-to-date medical schools of fifty years ago. Six full-fledged professors and two assistants! Today, as observed before, a second-rate medical school numbers its teachers and instructors in scores and scores—nay in hundreds![2]

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namely, that legitimate medicine is unsuited to the peculiarities of certain minds, and will never obtain their confidence. I came, then, gentlemen, to announce to you the unpleasant, but I verily believe logical sequence, that quackery is immortal!—immortal as the varying phases of the human intellect. We may never hope to see the day when it will have no more wondering worshippers at its shrine. Why, then, waste our energies in a useless and eternal warfare with quackery? Let the medical men learn to cultivate their profession, multiply its facts, adorn the pages of its literature, add to its dignity, and still more to its usefulness, and let quackery take care of itself." From an address to the class of 1857, Medical College of Ohio. This quotation, together with a portrait of Dr. Armor, will be found in Otto Juettner's *Daniel Drake and his Followers*, 1909.—V. R.

[2] We think our author over-emphasizes the value of large faculties. The larger the faculty, the less intimate is the contact between teacher and student. In looking over the college catalogues of today, we find long lists of names, but few of them will be remembered fifty years hence. On the other hand, every one of Dr. Johnson's seven professors left his mark on American medicine; for example, all seven have their columns in so recent a publication as Howard A. Kelly and Walter L. Burrage's *American Medical Biographies*, 1920.

Abram Sager (1810-77), who held, at different times, the chairs of botany and zoology, theory and practice of medicine, obstetrics and diseases of women and children, was chief of the botanical and zoological

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departments of the Michigan Geological Survey, and by his valuable gifts laid the foundation of the botanical, zoological, craniological and embryological collections in the University of Michigan. Dr. Sager was dean of the medical department for several years. "In 1875 the board of regents introduced chairs of homeopathy in intimate connection with the regular school in the medical department, whereupon, believing such association not consistent with honor or fealty to his profession, he tendered his resignation of the deanship of the medical faculty, and withdrew from the institution."—W. B. Atkinson, *Physicians and Surgeons of the United States,* 1878. For a biographical sketch of Sager, see W. F. Breakey, *Transactions American Medical Association,* 1878.

Silas Hamilton Douglas (1816-90) improved the status of chemical teaching in the west. Leartus Conner says: "For several years he used a private chemical laboratory for teaching, but in 1856 the Regents, at his solicitation, erected a chemical laboratory at a cost of six thousand dollars and made practical chemistry a part of the curriculum. This was his great contribution to medical teaching—the initiation of laboratory training for the degree of M.D."

Moses Gunn (1822-87), the best-known member of the faculty, later accepted the professorship of surgery at Rush Medical College, and was the most influential surgeon in Chicago until the advent of the greater Senn. See *Memorial Sketches of Moses Gunn,* by his wife, 1889.

Alonzo Benjamin Palmer (1815-87), who occupied the chairs of materia medica and therapeutics and diseases of women and children until he was transferred to pathology and the theory and practice of medicine, succeeded Sager as dean, but was likewise an opponent of homeopathy. His chief writings were his massive *Treatise on the Science and Practice of Medicine,* and his *Treatise on Epidemic Cholera and Allied Diseases,* 1865. For several years he was co-editor of the *Peninsular Medical Journal.* See *Memorial Volume,* by his wife, 1890.

Corydon La Ford (1813-94) was a lifelong disciple of anatomy, teaching it in the Geneva Medical College, Buffalo Medical College, Castleton Medical College of Vermont, Berkshire Medical Institution, Medical School of Maine, University of Michigan, and the Long Island College Hospital. See *Memorial Discourse,* by Victor C. Vaughan, 1894.

Samuel Glasgow Armor (1819-85) was likewise a peripatetic, going from chair to chair, until he was called to the Long Island College Hospital, where he succeeded the famous Austin Flint. See *The Beloved Physician; a Tribute to the Memory of the Late Samuel G. Armor,* 1885.

Albert Benjamin Prescott (1832-1905), the youngest of the seven professors and the only one who reached the twentieth century, became professor of chemistry, director of the chemical laboratory, and dean of the school of pharmacy. Dr. Prescott was president of the American Chemical Society, and of the American Pharmaceutical Association. He wrote more than a hundred articles and treatises. *Memorials and Bibliography,* by his wife, 1906.—V. R.

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VOL. 28. No. 12 DECEMBER 1921

MEDICAL LIFE

Frank Baker Memorial Number

Copyrighted and Published Monthly by the Medical Life Press
12 Mount Morris Park West, New York, N. Y.

Life Subscription, Fifteen Dollars **Annual Subscription, Three Dollars**

Entered as Second Class Matter at the New York Post Office, under the Act of March 3, 1879

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VOLUME 28 NUMBER 12 — DECEMBER, 1921 — NUMBER FIFTEEN OF NEW SERIES

Section on Contemporary Medicine

MODERN CARDIOLOGY

By William J. Cruikshank, M.D., F.A.C.P.

President of the Brooklyn Cardiological Society; Consulting Physician, Wyckoff Heights Hospital.

II—Auricular Fibrillation

Knowledge of auricular fibrillation and of other branches of modern cardiology is the result of scientific endeavor and achievement; that is to say, it is based on demonstrated and demonstrable facts, and not on mere theory. By reason of the fact that our knowledge of that condition is fundamental and scientific, there are some points concerning it which still remain unsettled.[1] Until these points have been definitely disposed of by the cardiologist the general practitioner can have little or no interest in them. This writer will, therefore, at this time, refrain from discussing them. In this connection it might be said in passing that the glory of modern scientific endeavor as distinguished from earlier and medieval attempts lies in its catholic spirit—its wide open door. When today honest endeavor, exhibiting properly-attested credentials, presents itself for admission to scientific realms, that door is flung wide open. There are no bolts to be shot, no bars to be let down, no persecutions to follow. All that is required of the applicant is evidence of honesty, sincerity and rationality. Hence science recognizes no miracles; neither does she fraternize with the supernatural. It is her business to pierce the veneer

[1] Notably the use of quinidin in the treatment of auricular fibrillation and the question recently raised by Garrey concerning its mechanism.

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of hypocrisy and to recognize the mask of fraud and deceit. Neither orthodox belief, creed nor pathy is demanded by science. On the contrary, she considers all these things as a hindrance to progress. Science is intolerant of humbug and sham. She insists that the applicant for her recognition shall be the embodiment of honest, and truthful, endeavor. No sham is tolerated. Science does not, however, require that such an applicant shall have attained full growth. The scientific infant is as cordially welcome to the folds as is the more mature.

Modern cardiology is still an infant, but she is a very promising child, healthy, active and well-nourished, who, when she becomes a little older, will reflect credit on her parents and remote ancestors.[2] Of course, all such developing and maturing processes require for ultimate success, perseverance, patience and above all, and over all, the strictest integrity of purpose. The writer is sure of this because he has himself lived through many successful evolutionary and revolutionary processes in the development of medical and surgical science. He recalls very well the unraveling by the modest Reginald Fitz of the pathological muddle often occurring in the right iliac fossa and the ultimate exposure by the surgeon of that human assassin, the diseased appendix of the cecum which followed. He witnessed the first invasions of that holy of holies, the peritoneum, by the masterful hands of Charles McBurney, George Ryerson Fowler and other pioneer abdominal surgeons and teachers. He was in Germany when Robert Koch first demonstrated the cause of pulmonary tuberculosis and heard that master bacteriologist in Berlin when first he spoke on the subject. This writer remembers as if it occurred only yesterday the first injections of diphtheria antitoxin and took part in the discussions concerning the proper use of that life-saver. In like manner is he now witnessing the illumination of the formerly darkened precordial space, the exposure of the bundle of His, and the other anatomical structures comprising the cardiac conducting and contracting systems. Through his acquaintance with the work of the masterful Mackenzie, Einthoven, Lewis, Ritchie and other eminent cardiologists he is endeavoring to learn something of the pathological processes constantly occurring in those tissues, and hopes as time passes to add to the knowledge of their intelligent treatment by the general practitioner.

With this end in view, the following discussion of auricular fibrillation is contributed:

[2] I do not think I am going too far when I say that modern Cardiology bids fair to become one of the most exact branches of medical science.

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"When a patient is known to have mitral stenosis, and who requires treatment for cardiac failure, exhibits not only dropsy, venous engorgement and cyanosis, but a rapid and disordered heart action in which there is no rhythmic sequence, he presents a characteristic picture of auricular fibrillation."

When first I read these words, written by Lewis, I was in attendance upon a patient whose heart was behaving in a manner which puzzled me. She was a woman about 30, married, childless, neurasthenic, with a rheumatic history, and presenting the evidences of mitral stenosis with slight cardiac inefficiency, but no pulse irregularity. Her heart had never given her much trouble, and her attention was, therefore, centered on her neurasthenic symptoms. She was up and about all of the time attending to the duties of her home. One morning I was summoned to see her and found that, without apparent cause, she had suddenly developed a very rapid, irregular, disorderly and delirious heart with change of murmur. Further study of her case and examination of the literature convinced me that I was dealing with auricular fibrillation, a disturbance of cardiac mechanism, the auricular origin of which was demonstrated by Lewis in 1909, the condition formerly (1908) described by Mackenzie under the name "nodal rhythm."

This woman's heart, in spite of what was then regarded as appropriate treatment, never regained its normal rhythm. Under its heavy burden of inefficiency and ventricular delirium it finally became exhausted, complete failure ending the scene. (She died about six months after the onset of fibrillation.)[8] Further reflection on the rather bewildering clinical phenomena which this case had persistently presented constrained me to the opinion that the fibrillating auricle often goes unrecognized, and it is with this idea in mind that I am bringing up the subject for consideration.

Of course, knowledge of auricular fibrillation, as of all branches of cardiology, has in its final analysis, a single purpose; namely, the prevention of heart failure. But the latter phrase must be used advisedly, for in dealing with this subject there can be nothing more misleading than a superficial conception of that term. It must be understood that by "heart failure" is meant, not necessarily complete cessation of function, nor even advanced failure, but rather, as Mackenzie has expressed it, a condition in which the heart is unable to maintain an efficient circulation when called upon to meet the efforts necessary in the daily life of the individual.

[8] The writer saw this case in 1915, about six years ago, before modern cardiology was well established. He thinks that present knowledge of the subject might produce better results.

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Until quite recently the back pressure theory of the production of cardiac failure held universal sway. This theory has fallen under what seems to be just criticism as having its origin in misconceptions of the physical phenomena presented. Indeed, it is stated by Mackenzie that, owing to misinterpretation of the cardiac sounds and noises upon which that theory was based, it is now questionable whether the discovery of auscultation, so far, has done more harm than good.

With this repudiation by Mackenzie of the back pressure theory, come similar opinions upon the subject from other eminent cardiologists, including Lewis and Ritchie, who express the belief that explanation of cardiac failure should, for the most part, be sought in certain deviations from what is known as normal cardiac mechanism, and that these deviations frequently manifest themselves in either slight or marked cardiac and pulse irregularities and so-called functional disturbances of rhythm which may properly be regarded as evidence of remote or near cardiac inefficiency.

It may be interesting in passing to refer briefly to a few of these disorders of cardiac mechanism in order that we may compare their clinical pictures with those presented by fibrillation of the auricle.

The first of these which might be mentioned is that disorder of the heart beat occurring in young adults which is characterized by a periodic irregularity of the pulse following separate and deep acts of breathing. This is called sinus arythmia, a disorder in which the whole heart is involved. These sinus irregularities are usually due to alterations of the vagal tone and will generally disappear with exercise, with fever, or shortly after the administration of atropin.

In many patients in whom the radial pulsations and heart beats run with perfect uniformity for long periods, an occasional isolated disturbance is noted. The pulse intermits; it loses one of its serial beats at intervals. When the heart is examined, it is found that at the moment of the disturbance, the ventricular contraction appears before the rhythmic beat is due, and that this early beat is followed by a pause of unusual length. For this disturbance of mechanism Lewis has substituted the term premature contraction for extra-systole, the term used to describe it in the past.

If, in a like case, where the occasional pulse fails, a similar failure of ventrical action is discovered so that on listening to the apex beat no abnormal sounds are heard, but the heart remains

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silent throughout the whole of the pause, the phenomena are evidences of another condition, namely heart block. But it should be remembered that heart block manifests itself in many other ways and in no way which contrasts more thoroughly with the example just cited than by its production of perfectly regular pauses of conspicuously slow rate.

The term paroxysmal tachycardia is used by Lewis in a restricted sense. He reserved it for those disturbances of cardiac mechanism, in which an absolutely abrupt acceleration of regular heart beat subsequently terminating in an equally abrupt manner, is repeated from time to time.

Now and then among our heart cases, more especially in the elderly, we find regular and accelerated heart action at rates of 120 to 160 per minute. This acceleration is noticeable for its uniformity under all sorts of conditions and for its tendency to persist without apparent cause. It is generally the result of auricular flutter, concerning which much has recently been written, a condition to which both Ritchie and Lewis are devoting special consideration. This condition of flutter may be mistaken for fibrillation, or it may, in the same heart, alternate with fibrillation. But where there is perfect rhythmic action of the ventricles, fibrillation, as a rule, may be excluded.

A very interesting disturbance of cardiac mechanism has been authoritatively referred to as follows: "If in a case of renal disease, or arterio-sclerosis, the pulse tension is high, Cheyne-Stokes' breathing perhaps is present, and the pulse is regular in rhythm, but varies in force so that each alternate beat is strong and each alternate beat is relatively weak, an example of what is called alternation of the pulse is under observation."

These are a few disorders of the heart beat which, in the light of modern cardiology, are occupying attention.

I have chosen to limit my remarks at this time to the disturbance of cardiac mechanism known as auricular fibrillation because its scientific demonstration is regarded by eminent cardiologists as the most important discovery yet made in the domain of functional cardiac pathology. We are informed by Mackenzie that 60 to 70 per cent. of all cases of serious heart failure met with in practice owe the failure directly to this condition or have failure aggravated by its presence. Moreover, there seems to be little difficulty in recognizing it as a distinct clinical entity and its proper appreciation by the clinician affords him a cure basis for rational therapy. Indeed, intelligent application of this therapy often enables the discriminating physician to anticipate serious

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inefficiency and failure, to relieve great distress and suffering and to prolong and save human life which otherwise would be lost.

Now, in order that we may have a clear understanding of this subject, I am going to say a word concerning modern cardiac physiology. Whether the myogenic or neurogenic theory of cardiac action be accepted, it seems to be settled that in the evolution of the heart from the tube of the embryo, cardiac muscle has retained specalized cell function which endows its tissue with—First, the power of producing a stimulus which can excite the heart to contract—stimulus production; second, the power of being able to receive a stimulus—excitability; third, the power of conveying a stimulus from fiber to fiber—conductivity; fourth, the power of contracting when stimulated—contractability; fifth, the power to retain a certain amount of contraction even when the active movement has ceased—tonicity.

Bearing these facts in mind, we recall that the complete beat of the normal heart consists of a contraction of its chambers in an orderly sequence. The wave of contraction starts in a small and newly-discovered mass of tissue, the sino-auricular node, which lies imbedded in the upper and anterior end of the sulcus terminals.[4] This node has been named the pacemaker of the heart. The sulcus terminalis runs from the junction of the right auricular appendix and the superior vena cava toward the inferior vena cava. The tissue of the node, consisting of a specialized network of muscle cells richly supplied by the nerves of the heart which enter in this region, lies, therefore, at the mouth of the superior vena cava and is imbedded in the right auricle. The contraction which commences in its neighborhood spreads through the walls of both auricles and is transmitted by the auriculo-ventricular node to the auriculo-ventricular bundle, thence to the ventricles. This bundle is the bundle of His. It rises in the auriculo-ventricular node which lies at the base of the auricular septum on the right side, below and to the right of the coronary sinus. From this point the bundle runs along the top of the inter-ventricular septum, just below its membranous part, and then divides into the right and left septal divisions which run down in each ventricle in the inter-ventricular septum, and pass into the papillary muscles arising from the septum. From the papillary muscles fine bands of delicate fibers run to the ventricular muscle near the apex of the ventricle. It is easy, says Starling, to determine the course of the bundle in sections of the heart since the muscle fibers com-

[4] B. S. Oppenheimer has recently shown that the node lies immediately, for the human heart, to the venous side of the remnants of the old venous valves.

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posing it are of a more primitive character than the rest of the cardiac musculature and have indeed long been known and distinguished under the name of the fibers of Purkinje. It is found that division of this bundle absolutely destroys functional continuity between the auricles and the ventricles, and that the fibers of it may be destroyed by disease, thus producing the pathological changes and symptomatology which characterize Adams-Stokes' syndrome, or heart block, and other disturbances of rhythm. It is quite apparent therefore, that definite knowledge of the diagnosis and treatment of disease of the heart is impossible unless the functions and pathology of this conducting system are kept in mind. This fact applies especially to a proper understanding of auricular fibrillation, the subject of my remarks.

(To be continued.)

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THE MODERN TREATMENT OF GASTROINTESTINAL DISEASES

VIII—The Treatment of Constipation (Continued)

By John L. Kantor, M.D.,

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SPECIAL FORMS OF CONSTIPATION.—Heretofore we have dwelt on the various principles underlying the treatment of constipation in general. It is convenient at this point, in order to aid further discussion, to distinguish at least five forms of constipation which are clinically prominent. These are:

1. Atonic constipation.
2. Spastic constipation.
3. Dyschezia.
4. Constipation associated with redundant colon.
5. Constipation associated with mucous colitis.

The treatment most appropriate to each of these special forms may now be considered.

Atonic Constipation.—Atonic constipation is etiologically associated with one or more of the following factors:

1. Congenital intestinal atony or hypoplasia occurring either alone or as a part of asthenia universalis.
2. The abuse of cathartics and enemata.
3. A distal spastic constipation, in which the atony is limited to the colon proximal to the point of spasm.

When the atony is due to a distal spasm (third group), the former condition should be disregarded in favor of active treat-

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ment aimed at relief of the spastic contractures. Otherwise, in cases of atonic constipation the guiding principle is that of stimulation. Whether the primary defect be assumed to lie in a congenital muscular hypoplasia or in a defective neuro-muscular mechanism of the colon, the direct object of treatment is to increase the inherent capacity for normal and effective propulsion of the fecal column. It may perhaps be possible, judging from certain studies made on soldiers, that the intestinal musculature may be made to undergo actual hypertrophy in keeping with the general body musculature as a result of rigorous physical training. Be that as it may, the policy of stimulation, as carried out in every day practice, should include practically all the methods of treatment heretofore described, particular emphasis being laid upon increased water consumption, bulky diet, the institution of regular bowel habits, and the discontinuance of all artificial aids to evacuation. Where the subject is unusually malnourished or asthenic the stimulation, appropriately modified, should be combined with a fattening cure and with the correction of ptosis by abdominal support.

An outline of treatment that has worked well in practice is as follows:

MANAGEMENT OF CONSTIPATION (Atonic)

(Vanderbilt Clinic Diet Lists, modified)

General Rules:

1. Have a regular time for meals.
2. Have a regular time for going to the toilet.
3. Take no cathartics or enemas unless ordered.
4. Take a daily walk in the open air.
5. Practice the exercises prescribed.

Exercises:

(Each to be done fifteen times)

1. Knees stiff, bend forward and touch the floor.
2. Bend back from hips.
3. Bend to the right and left from hips.
4. Twist to the right and left on hips.

Diet—Breakfast:

Any fruit (fresh, cooked, preserved or dried).
Dry or cooked cereal with cream or butter.
Bread (graham, rye, bran, whole wheat or corn).
Marmalade, jelly, or jam.
Coffee with cream and sugar.

Lunch and Dinner:

Soup (without milk or flour).
Fish, meat, eggs (eat as much fat as possible).
Vegetables, fresh or canned. Greens, especially those with residues (celery, lettuce, spinach, cabbage, etc., up to 2 cupfuls a day).
Salads with oil.
Desserts: Fresh or preserved fruit are best. Jellies, pies (except undercrust), water ices. Ice cream in small amounts.
Bread (see breakfast) and butter.

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Fluids:
At least one glass of water on arising, and otherwise freely up to eight glasses daily.
Carbonated waters, buttermilk, fermented milk, cider.
Avoid or use in moderation:
White bread, noodles, macaroni, cake, rice, barley, potatoes, cheese, tea, milk (only in some cases).

Spastic Constipation.—Spastic constipation is more common than is perhaps generally recognized. It is characterized by the existence of a state of increased tonicity of the large intestine. The distal portion of the gut is the part usually involved, the condition affecting either the entire colon from the hepatic flexure onward, or certain special areas such as the descending colon, the pelvic (sigmoid) colon, the pelvi-rectal flexure, or the anal sphincter alone. In the last-named instance local lesions may play an exciting rôle (fissures, ulcers, hemorrhoids). As already mentioned, spastic constipation may be associated with atony of the proximal large intestine, the cecum and ascending colon acting as reservoirs for large accumulations of feces which are passed, small portions at a time, beyond the areas involved in the spasm. Clinically, this condition may be associated with daily, but quite insufficient, evacuations.

The common symptoms of spastic constipation are abdominal cramps, general or localized in the left lower quadrant, often increased in intensity by defecation and still more by catharsis; peristaltic unrest; and the passage of small thin stools, or of separate hard lumps like marbles (sheep dung stools). Examination of the left lower abdomen often reveals an easily felt descending colon which may contain one or more scybalous masses, and which may relax and contract under the palpating fingers. This condition is not infrequently associated with a distended, gurgling, and sometimes tender cecum. The anus may feel tight to the examining finger, while inspection of the pelvic colon with the sigmoidoscope often reveals the presence of an irritable, spastic condition which may prevent the introduction of the whole length of the instrument (ten inches).

In short, we are dealing with a condition of colonic irritability very similar to that of "gastric irritation" previously considered. The principles of treatment are also very similar, involving rest, smooth diet, and sedative medication. In order to attain as much rest as possible in patients who must keep on working, it is well to break the nervous strain under which they commonly labor by periods of deliberate relaxation after meals, at the time when the bowels should move, and for as long a stretch at night as possible. A warm daily bath may help con-

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siderably in this direction. Instead of a coarse, stimulating diet, as that recommended for the atonic form of constipation, the food should be particularly bland and non-irritating. For this purpose the *standard bland diet* is very well adapted.

Sedative measures are both general and local in character. Of the general sedative drugs commonly employed, bromides before meals and bromides and chloral at night give good service. Codeine, and in some cases marked by extreme irritability, morphine, may be required before the restoration of normal bowel action is consumated. Belladonna (atropine) is here of especial value, particularly where its toxic effects do not spoil its action. Many cases of spastic constipation are cured by belladonna, without the help of any other agent.

Chief among local measures are the emollients, particularly the oils. These may be administered either by mouth or by rectum. By mouth both olive oil and mineral oil are of value. As already explained, the former is absorbed to the point of tolerance and may therefore have to be taken in relatively large doses to be available for "intestinal lubrication." Where desired, it may be combined with mineral oil.

Mineral oil, being indigestible, acts in the same way as does vegetable oil when the latter is given in excess, i.e., it softens the feces by mixing with them in the form of small globules. The dose required varies considerably in different individuals, the average daily amount ranging from one to three ounces. It is better taken in two or three doses rather than all at once. The daily portion may be safely increased by one-half ounce at a time until the excess appears in the form of a leak from the anus. If by this time satisfactory bowel action is not achieved it may be assumed that the patient will not respond to the use of this substance in any amount. In some instances mineral oil is not acceptable on account of excessive gastric sensitiveness to this form of medication.

For rectal administration both forms of oil are again available. The vegetable product is perhaps the more popular for this purpose. The results of this form of application are on the whole very gratifying and are due in part to actual lubrication and soothing of the irritated and inflamed mucosa, and in part to interference with water absorption and with the formation of dry, hard fecal masses. The simplest and best procedure is to administer small oil injections to be retained over night in the colon. Depending on the patient's tolerance, from two to four or more ounces of oil warmed to body temperature are introduced in the

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recumbent posture just before retiring. For the actual injection a small hand syringe may be employed or a rectal tube with funnel. A very useful, though somewhat more expensive apparatus is the enemator of Dudley Roberts. This consists essentially of a curved rectal tube of hard rubber, the end of which is olive-shaped to make it self-retaining, attached by a convenient length of soft rubber tubing to a Politzer bag provided with a stop-cock at its opening. The curve of the rectal tube enables it to be readily passed from the front of the body to the anal opening, where by a slight traction it enters the anus in the proper direction. It has been demonstrated that this form of tube is much less awkwardly introduced than is the ordinary form by reaching around the buttocks.

The exact amount of oil to be used varies with the patient's ability to retain it. Some preparations of cottonseed oil are irritating because of the fatty acids that may be present. These can be completely removed (Soper) by boiling with calcined magnesia and bismuth subcarbonate in the proportion of four grams of each to the pint of oil, and then straining.

Oil injections should be made in full doses nightly during the first two weeks or so of treatment. When satisfactory spontaneous stools recur regularly each morning the amount of oil should be reduced for the next week or two. If everything still goes well, one or two injections may be dropped during the following week, and every other injection during the week after that. Finally an injection should be taken only on those evenings when the bowels were not moved during the daytime.

Of considerable interest in the therapy of intestinal spasms is a form of direct intraintestinal treatment recommended by Soper. A sigmoidoscope is introduced to the point of spasm and direct applications are made "to the contracted area by means of cotton applicators soaked in a saturated solution of magnesium sulfate. When the contractures are above the reach of the sigmoidoscopic tube a soft catheter is introduced through the instrument and one to two ounces of the solution are injected. In moderate contractures six to eight treatments usually suffice to overcome the spasticity and permit the restoration of normal colonic function. Severe cases may require a larger number of treatments spaced over a period of two to three months' time. The same treatment is efficacious in spastic contractures of the rectum. It must be noted however, that the magnesium sulfate solution has no effect whatsoever upon sphincter spasm of the anal canal. The indications for treatment of sphincter spasm

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are direct instrumental dilatations and appropriate treatment of the accompanying lesions of the mucosa."

The method outlined above has the advantage of precision of application and ease of execution. In cases of postoperative distention associated with distal colonic and rectal spasm, and where obviously a proctoscopic manipulation would be out of the question, an enema consisting of about three ounces of magnesium sulfate solution may prove very useful in relaxing the contractures and thus relieving the distention and the gas pains. Soper prefers to use his direct intraintestinal therapy in all cases of spasticity of the lower colon, and employs oil enemata only when the magnesium sulfate method of treatment is not feasible.

Dyschezia.—In some cases of constipation it is found, on direct examination, that the rectum is practically always filled with feces. Further study reveals the fact that there is no delay in the propulsion of the stool through the proximal colon; it is only when the most distal portion is reached that progress ceases. In other words, we are dealing with a condition where that portion of the gut charged with the actual expulsion of the fecal matter fails to act. The pathogenesis of this condition, known as dyschezia, has been described by Hertz as follows: "The habitual neglect of the call to defecation leads to the accumulation of feces in the rectum and pelvic colon, which become gradually more and more distended. The distention diminishes the tone and impairs the contractility of the musculature; as the force required to empty the rectum when overdistended with feces, is much greater than that required to empty it under normal conditions, the weakened muscular coat is incompetent to do its work, and, even if a great effort be made, the evacuation remains incomplete. In time the musculature of the pelvic colon and rectum may become so profoundly atonic and paretic, that it can never be restored to its normal condition." Dyschezia may also develop secondarily to any condition which causes pain during defecation, such as inflamed or thrombotic hemorrhoids, anal ulcers or fissures, pelvic peritonitis, etc.

The treatment of the secondary form of dyschezia, just mentioned, is obviously that of the underlying condition; once this is removed the constipation usually disappears spontaneously. In general, the employment of cathartics in the treatment of dyschezia can only do harm since they serve merely to irritate the colon whose function is normal, whereas they have no effect whatever on the rectum which is the seat of the trouble. It is clear

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therefore that success can be achieved only by keeping the rectum and pelvic colon as free from fecal accumulations as possible. This can best be accomplished by the regular employment of enemata. The amount and nature of the injection must be varied to suit the individual taste. Sometimes oil works well, sometimes water does better. Where much stimulation is required, cold water in relatively large quantities may be necessary; ordinarily, however, the injection of a pint or two of plain warm water suffices. In cases showing but a slight impairment of function the use of a glycerine suppository may be all that is needed. In infants the insertion of a finger tip or of a small bent glass rod into the anus frequently serves to set up a satisfactory desire for defecation.

Redundant Colon.—Increasing experience with the Roentgen study of constipation has shown a surprising number of instances of a previously undiagnosed, or indeed frequently misdiagnosed, condition, viz., redundancy of the colon. This abnormality, undoubtedly congenital in nature, involves most commonly the distal, i.e., the descending, iliac, and pelvic colon, but it may also extend proximally as far as the cecum.

In one such case studied by the writer the cecum was low, the mid-transverse colon was angulated sharply downwards, resting on the floor of the pelvis, and the descending colon described a complete loop at its lowermost portion. Fifty-eight hours after the ingestion of the barium meal, and despite two small bowel movements, over three-quarters of the material was still retained in the colon. In another case, twenty-four hours after mouth filling, the vertical distance from the low-lying, distended cecum to the hepatic flexure was exactly one foot, and from the ptosed mid-transverse colon to the top of the splenic flexure was just two feet. A barium enema revealed the presence of eight distinct twists and angulations, most of them in the pelvic colon.

It seems probable that the existence of such mechanical hindrances in the distal colon must account for much of the distention, ptosis and elongation that is found in the proximal portion. Patients suffering from colonic redundancy often give a history of constipation dating back from childhood. The interval between spontaneous bowel movements may be three or four days or more. In women the condition is frequently aggravated by childbirth. There is often discomfort in the lower right quadrant, characterized as dull, dragging, sticking in nature, and increased by bodily exercise. The cecum can often be felt and may be gurgling and tender. Not infrequently the appendix is removed to relieve the

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right sided distress, but needless to say, without benefiting either this or the underlying constipation. The condition may be familial and hereditary.

Cathartics are often ineffectual and add unfruitful colics to the discomforts otherwise present. Enemas, though somewhat more successful, are not uncommonly "lost" in the long, tortuous, and capacious colon.

The diagnosis of this condition by physical examination is difficult. Examination of the rectum reveals no fecal accumulation, for the delay is invariably above the pelvi-rectal flexure. It is only by careful Roentgen study both by barium meal and by opaque enema that the existence and the extent of the colonic redundancy can be accurately determined.

In the treatment of this type of constipation violent purges should be strictly avoided lest they bring on mechanical ileus. A rough, bulky diet is usually well tolerated and forced water drinking is generally necessary to prevent undue drying of the feces. Mineral oil by mouth often gives very good results. The injection of fairly large quantities (six to eight ounces) of oil to be retained over night is a useful procedure, as is an occasional colonic irrigation to remove old fecal accumulations. It is not essential for the bowels to move daily, a stool every forty-eight hours being quite compatible with a very fair degree of comfort.

If the above measures fail, a compromise with the cathartic habit is justifiable. Only the mildest laxatives should be selected, such as cascara or phenolphthalein, and these should be given, as always, in the smallest dose in keeping with satisfactory action.

Surgical removal of part or all of the large intestine (partial or total colectomy) as well as short-circuiting operations (unilateral or complete colonic exclusion with ileo-sigmoidostomy) have been practiced in these cases. All such procedures are attended with a very grave mortality. Unilateral exclusions are often worse than useless owing to the tendency for feces to dam back into the blind pouch of the intestine. In the writer's opinion operative treatment of constipation is seldom justifiable, but if such an intervention is decided upon, the safest and most promising procedure would appear to be a two-stage extraperitoneal resection (Mikulicz) as is commonly practiced in bowel operations for organic disease.

Mucous Colitis.—Mucous colitis is a functional bowel disorder (neurosis) characterized by the presence of large amounts of mucus in the stools and associated with constipation or at

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least incomplete bowel evacuation. In severe forms the clinical picture includes abdominal colics, spastic constipation, intense putrefactive toxemia, and various widespread neurotic manifestations. Very often the presence of mucus in the stools is not noticed by the patient and can only be elicited by careful questioning on the part of the physician.

The treatment of mucous colitis involves:

1. Control of the underlying constipation.
2. Control of mucus accumulation.
3. Control of the colic.
4. Improvement of the nervous and general health.

1. The underlying constipation is to be controlled by the measures already outlined. If spasticity is marked or if the colon is very sensitive to irritants it is well to avoid the use of rough foods. Indeed these may be more harmful under such circumstances than mild tonic laxatives such as cascara agar or phenolphthalein agar. Otherwise the general rule is that the diet should be built up as quickly as possible (see diet in atonic constipation) so that colonic tolerance to the ordinary food irritants should be increased rather than diminished. In general the oils are well borne in mucous colitis both when given by mouth and by rectum. Overnight instillations of warm olive or cottonseed oil are particularly beneficial not only for the constipation but for the removal of mucus as well.

2. To overcome the accumulation of mucus a weekly purge of castor oil or of calomel is recommended. Colon irrigations are of decided benefit. At first the irrigations may be given daily or every other day for one or two weeks, then twice a week for several more weeks, and finally once a week until the mucus is eliminated. Before the irrigation proper, a cleansing enema should be given to remove whatever fecal accumulation may be present. Plain hot water, in amounts ranging from twelve to twenty-four quarts should be employed for the irrigation. The water should be run in slowly, the reservoir being two feet above the patient. Bastedo points out that an irrigation should be regarded as a failure if no water is retained to be evacuated after the irrigation is over, or if the water returns clear throughout; for obviously, in such cases, the liquid has failed to get past the spastic descending colon or sigmoid. Where spasticity is prominent local intraintestinal applications of magnesium sulfate are very well worth trying.

Transduodenal lavage with hypertonic solution made up of 0.9 per cent. each of sodium chloride and sodium sulfate, as

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recommended by Jutte, has been practiced by the writer with good results in a limited number of cases. This method has the advantage over colonic irrigations in that the fluids are introduced in the "physiologic" direction, i.e. from above downward. One and one-half to two quarts suffice for the injection. The solution should be hot (110 degrees in the reservoir) and should be introduced slowly (two quarts in 20 to 30 minutes) by gravity. There is no discomfort whatever and the treatment is generally followed within an hour by several free, watery, evacuations.

3. The treatment of the attacks of colic necessitates active sedative and relaxing measures. Rest in bed; bromide by mouth; atropine and codeine by hypodermic injection, all in full physiologic doses; together with hot applications to the abdomen in the form of hot water bag, electric pad, poultice or stupe, or a hot bath, are among the most useful measures (Bastedo). In addition, the mucus accumulation must be gotten rid of, whether by castor oil by mouth, by colonic irrigations, or by the administration of oil enemata.

4. For measures directed toward the improvement of the nervous and general health, the reader is referred to the preceding sections dealing with the general management of the neuroses. Inasmuch as increased fatiguability is a characteristic of patients suffering from mucous colitis, it is essential that they should get plenty of rest and sleep and that they should avoid strains and excitements of all sorts, mental, physical, and emotional.

(Next instalment: *The Cothartic Treatment of Constipation.*)

EROTICISM IN WOMAN FROM A MEDICAL STANDPOINT

By Georg Recht, M.D.

Sexuality in woman, has from time immemorial stood in the foreground of the psychological interest of all countries. The evaluation of the feminine psyche has always been the indicator of the cultural *niveau* of a nation. The conception of femininity in the sense of Montegazza has awakened full interest since the creation of Eve, as in female sexuality and its product—eroticism—is to be found inexhaustible and stimulating life-preserving force.

From the doll-period of the lisping girl, culminating in the crown of life—motherhood—we find, in every phase of woman's life, the overwhelming instinct of the feminine-stigmatized psyche. We know, for instance, from the sexual psychology of the child, that the first specific instinct-manifestation of a girl is to be found

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in the nursery. We also know further that the first attraction to the opposite sex in the light of unconscious eroticism is often traced back to childhood days. Trivial excrescences of this eroticism, of which unconscious sexuality forms the basis, we find in the naturalistic works of Emil Zola.

This different thinking and feeling of male and female children, therefore, begins long before puberty, i.e., before the macroscopically-evident symptomatology of bodily changes (secondary sexual characteristics). In fact, I believe I am not mistaken, when I refer the beginning of the qualitatively different manifestations of life of the female organism back into the fetal period, when, from a bisexual germ-foundation, the unisexual individual develops. This supposition does not lack morphological foundation. The histogeneses of the so-called Leyden cells teaches us, that these intercells, which lead the sex-differentiation of the embryo along the hormonal way, begin to functionate at that time. This scientific thesis of the specific function of the Leyden cells, has been substantiated through pathological experiments. By means of the specific activity of these cells, after birth, the central nervous system of the child is eroticized, and the reaction of this specific stimulus leads to those wonderful reflex-functions which lend to the individual his peculiar psychic and somatic sexual-characteristics.

We must thus assume, that children, already before birth, are not only externally (physically) but also (functionally) psychically differently endowed; therefore, years before puberty, their specific manifestations of life stand under the influence of the endocrine generative glandular secretions.

Too little attention is paid to sexual psychology previous to puberty, since only in the changes brought about by puberty is seen the specific feminization of the girl. How deeply unconscious sexuality reaches into the life of the girl is apparent from the time of the nursery—playing with dolls, playing father-mother. Further, there are certain functionating disturbances at this age—enuresia nocturna, pavor nocturnus—which constitute disputed points in psychoanalysis. As an example of development of child-sexuality before puberty, child-onanism must be pointed out, which in this period of life is no rarity. These few examples illustrate the fact that long before the crisis of puberty, the female and male organism are influenced by specific hormones, and that the first menstruation represents merely a crude manifestation of a general somatic mutation, which was preceded by a long chain of developments. If we bear in mind that the sexual hormones

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awaken in man and woman fundamentally different psychic as well as somatic functions, then it is justifiable to assume, that this specificum has not only microchemically but also biologically an absolutely different importance.

I have found it necessary to refer to the purely qualitative difference of the sex genesis of the man and woman, as recently a discussion arose in these pages whether the male or female possesses the stronger sexuality—that is, eroticism. This question loses its importance when we try to lean on the above cited facts; here it is not a question of quantity but strictly of quality.

Eroticism in woman embraces the entire span of life. The love for the doll in the period of unconscious sexuality, continues in the heart of the maiden, ripened by the cycle of ovulation into love for the idealized man. This love receives in marriage a sexual coloring—but it does not culminate in the sex act; its highest peak is reached, adorned by the crown of life, in motherhood, in fact, in the consciousness of motherhood (psychology of pregancy), only to spend itself in later life in devotion and love of family.

Eroticism of the male is frankly naturalistic. Sexual pleasure is the basis of his eroticism. It culminates in sexual congress and exhausts itself therein. It is subject to periodical fluctuation —as is the masculine sex urge itself.

Autoeroticism, in the sense of Havelock Ellis, proves that there is not in the erotic will of both sexes, a graduated but a qualitative difference. The sexually ripe girl longs for a sign of life from her beloved partner, perhaps for a kiss. Her eroticism expresses itself, perhaps, in a letter to her lover. The man longs passionately for his beloved. Nothing short of possession will satisfy his detumescencurge. To him the physical union with the idealized object of his sexuality is that highest manifestation of life, which Schopenhauer described as the Will to Live.

There is no doubt whatsoever, that eroticism in the man and in the woman is of two different qualities, which are perhaps analogues, but cannot be judged qualitatively. Quotations from the Bible, and from ancient times, which are brought forward in support of this thesis, are without value, as the conception of the purchased woman, and even the ceremonially-acquired woman is *sub specie orientis*.

The woman as the bodily possession of the man-despot, always at his disposal for his physical needs, tries by means of artificial sexualism to arouse his senses, to please him, in order not to fall into disfavor with her master. She fears being

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left behind the other women, and thus being cast out of the polygamous relation. Citations from Scripture and from times of sexual despotism bear too clearly the stamp of primitive-cultural life to be of service as documents in a modern discussion of the question. They are merely of cultural-historic interest, but cannot be used as polemic proofs.

The problem of prostitution, too, cannot be taken as evidence of stronger sexuality in the woman. The psychogenesis of prostitution teaches us that the purchase of the female body has, in the first place, its foundation in social-economic motives, and of course the environment is of importance. Only a small percentage of would-be prostitutes is recruited from individuals who are victims of a chronic hypertrophied sex-urge. There are abnormal alterations of sexual feeling which are grouped under the collective name of nymphomania into the psychopathia sexualis—the classic picture of which is drawn by Krafft-Ebing—but here we touch upon the born prostitutes, in whom are also evident other signs of degeneracy.

It would not be inappropriate to draw attention to the parallel between female criminality and prostitution in a constitutional sense, whose etiology with the somatic forms of the individual was brought together by Cesare Lombroso. Enumerated types represent merely pathological individuals. The normal average woman is on the contrary, marked by pronounced passivity of her sexual character. Every "impulse" is foreign to her being. This female passivity has been well summed up by Liepmann in a chapter on vulnerability of the female plasma, in his somewhat subjective but otherwise well-characterized work on the psyche of the modern woman (W. Liepmann, Psychologie der Frau, Berlin —Wien, 1920).

Not until we conceive that each female soul is, so to say, a kaleidoscope in which there are inexhaustible quantities of psychic pictures, as products of heredity, education, specific sex instinct and influences of environment, and where there are infinite combining possibilities, can we put down the feminine sexual character as a prototype of a specifically stigmatized sex. The problem of the sexual psychology of the normal modern woman can only be solved by deducing from the complex of the feminine psyche the afore mentioned influences, and by emphasizing those qualities which constitute the specific sex-factors of the female psyche.

Vienna, Austria.

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Books reviewed in this department may be ordered either from the publishers or from this office; for the accommodation of our readers, we will send any book, postpaid, upon receipt of the publisher's price.

THREE BOOKS ON SEX

1. The ——— of ———. By ————M.D. Published by————.
2. ——— and ———. By ————M.D. Published by————.
3. Sex Education and National Health. By C. Gasquoine Hartley. Published by Parsons, London, 6s.

A Review by Herman Dekker

(With an Interlude by the Editor)

Strange what fate may befall the works written to benefit mankind. Long is the list of books intended by their authors to help human beings to grope their way to the light, but which have been condemned by the law and current morality and burned by the common hangman.

The volumes of Dr. ——— and Dr. ——— have now joined the company of those suppressed pages of knowledge and light which an ignorant world seeks to destroy out of zeal for a falsely conceived good. The Boston publisher was threatened with persecution by a Comstockian society if he would not agree to recall the books from the market. Reasons of prudence caused a compliance with the demand, as under the special circumstances existing in Boston a vindication was regarded as out of the question—in short, the publisher would have been convicted before he was tried. It is some consolation, however, to reflect that a good many thousands of copies found their way into the hands of the public before the self-righteous watchers and warders of other people's morals issued their threat. Thus the suppression is but partial, and eventually the victory of Comstockery is likely to prove an empty one. Let us hope that the day is not far off when these volumes can again be openly put on the market. Disclosures as to how the strictly "moral" forces in Boston operate is not edifying reading. Remy de Gourmont once said something to the effect that where merely conventional morality triumphs some nasty things happen. The workings of the inner politics of Boston, as revealed recently in the attempted "100,000 shake-down" of certain motion-picture magnates, makes it not

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unreasonable to look for any kind of dishonesty and rottenness in that community.

The spirit that animates the authors of these two books can hardly be described as radical. Both are uncompromising champions of monogamy and marital fidelity. Indeed, it is for the purpose of making monogamy a success in fact and not merely in letter that they wrote their books. Sexual laxity is consistently opposed. All the more absurd, therefore, is the suppression of these volumes, since in all things they uphold the prevailing order. Can it be that a *really sincere* advocacy of monogamy is what arouses opposition? Schopenhauer once asked cynically, "Your monogamists, where are they?" and added that "prostitution is the other side of the shield of monogamy." George Meredith declared that "monogamous societies present a decent visage and a hideous rear." What these men evidently had in mind was a conventional acceptance of monogamy—a pretended interest in the home and the family, but with Lecky's "eternal priestess," the prostitute, safeguarding the chastity of decent girls and women by drawing off the lusts and lechery of the male's surplus sexual energy. That is, of course, the way the game has been played for many centuries. Now come Dr. ——— and Dr. ——— with a prescription for making love lasting and joyful within the bounds of monogamy, so that monogamy may be realized in actual practice—and the professional defenders of conventional monogamy cannot endure their efforts.

[INTERLUDE BY THE EDITOR: Here should follow the admirable reviews which Herman Dekker wrote, but our blue pencil has struck them out. In his indignation, our talented contributor forgets that a periodical which reviews or announces a suppressed volume renders itself unmailable and is liable to forfeit its second-class privileges. Two of the best and most useful magazines in America, *The Survey* and *The Nation*, were disgracefully humiliated by officialdom for reference to a book which they did not know had been declared forbidden. We are advised that the safest policy is not to mention even the title and author of a condemned volume. Is this twentieth century America, or is it sixteenth century heretic-hunting Spain? Is it any wonder that a free spirit like Bernard Shaw refuses to visit the country of Comstockery?

Years ago, when Theodore Schroeder, the chief authority in this country on free speech legislation, informed us that there were more laws restricting the freedom of press and speech in the United States than in any other nation, we thought our legal

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friend was trying to be epigrammatic, but year by year we have been learning the truth of Mr. Schroeder's assertion. Financially, we are the richest of nations; culturally, we are the poorest. Mencken is the most honest man in America.

In every department of sexology, ranging from social hygiene to birth control, America is the blockhead of nations. Our science is modern, our medicine is up-to-date, but as soon as the act of sexual intercourse is mentioned we seek the protection of a policeman and an aggressive archbishop. On one hand, our Government conspicuously proclaims that venereal disease is "perhaps the largest and most important single factor now impairing public health," and on the other hand it closes with censorship, important avenues of information.

Comstockery suppresses, but the venereal peril increases. While the American hangman is destroying books, spying upon booksellers, threatening editors, imprisoning publishers and authors, there is more sexual irregularity, more sexual disease, and more sexual misery in America today than ever before.

The two volumes are not among the first, and neither will they be among the last to be put into the American Index by the cardinals of Comstockery. The action is eminently characteristic of a country which drove out the childlike Gorky and his wife with howls of outraged virtue, and then furnished material for the Report of the Baltimore Vice Commission—a report whose 1200 lustful pages make the Whore of Babylon appear virginal.

Our code of sex morality was conceived in ignorance and brought forth in bigotry—and the result is an endless succession of sex tragedies. Less than any other nation has America looked the problem in the face. "The objection to Puritans," says Joseph Kling, "is that they always think below the belt."

Our contributor reviewed for these pages three books—two by physicians and one by a distinguished woman sexologist. Only the third (thus far) has not been declared "obscene," and only the third commentary can we publish—for we do not wish to earn the enmity of the gentleman upon whose shoulders has fallen the filthy mantle of Comstock.

Dear Mr. Dekker, we apologize that we have reduced your *Three Books on Sex* to *One Book on Sex*—but we would rather apologize to your enlightened self than find ourselves arguing with a Catholic magistrate whose cerebral convolutions place him in the fifteenth century.

We will terminate this interlude with a quotation from our adored Maxim Gorky. When the great Russian novelist was

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sailing out of New York harbor, he looked up at a certain statue and said: "The statute of liberty! There is green rust on the dark bronze!" It is the green rust that has covered up the useful books.]

We are still suffering from a pathological condition of the social mind, inherited from those early centuries of Christianity, when a wave of asceticism swept the western world. The very recklessness of our excesses show how morbid we are.

How long will it take before we outgrow this sickness? Many adults are mutilated in their feelings about sex beyond all cure. Education of the young may modify and rationalize our attitude. To help toward this end Mrs. Hartley has written her book. She has succeeded far better than is ordinarily done. Her spiritual equipment and knowledge of educational methods are superior. Those who have read her occasional articles and her two books, "The Truth About Woman" and "Motherhood," will agree to this.

The subject of sex-education is a delicate one, inasmuch as mistakes may easily be made in two ways. We may put too much emotion into our instruction, and so give a false emphasis to sex; or we may give more information than the child can at the time receive, and so let him drift into currents where he gets answers to specific questions in the form of specific but inaccurate information. If we instruct the child according to a grown-up standard of feeling, we give him a complicated set of ideals and values quite beyond his grasp or insight. The consequence is that he gets the notion of sex as a special sphere of mystery. What the child wants is plain information, directly imparted, to fill certain gaps in his knowledge, gaps which natural curiosity has spontaneously developed. If we begin to hesitate or apologize or to create an atmosphere of the unusual, we spoil everything. A matter-of-fact method of instruction, giving such facts as can be readily assimilated, is no doubt the best procedure.

The false method is well illustrated in Dr. Marie Stopes' book, "Radiant Motherhood." A mother takes her little son in her loving arms and by tone of voice and facial expression lets it be known that something very, very important is about to be revealed. God himself is called down from his heavenly throne to witness the ritual, which is designed to set up feelings of wonder, reverence, holiness, awe, and mystery regarding things sexual.

It is all a mistake. These reactions will come of themselves in good time in ordinary development. If they do not come, if

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they are beyond the individual's character, to seek to impose them or implant them by suggestion as a substitute for a natural growth, is only to make hypocrites of boys and girls and ultimately of men and women. Such complicated feelings are "adult values," for which the child is not ready—just as little as a new-born babe can digest dill pickles. Give youth truthful information and not emotion. In this connection Mrs. Hartley's formula seems sound: "The reply should be both candid and confidential—that is to say, it must satisfy the child's curiosity at that time; it should not go further than the immediate curiosity that is shown."

To this excellent counsel she then adds a sentence that is of more doubtful value: "At the same time, what is said should leave the impression that such subjects are to be avoided in general conversation, not at all because they are 'nasty,' but because they are so important and intimate that they can be mentioned only among those who love and respect one another."

Here indeed she recommends doing the thing to be most studiously shunned. Why should sex be isolated from that stream of general knowledge which comes to a child in an impersonal way? Too much emphasis upon a special quality belonging to sex is as bad as a complete taboo of the subject. Sex instructors forget the psychology of the child and think only of their own. The sex feelings of childhood are not definitely localized or centered; sex at that period, as most of us can readily recall, is a thing of only general significance. Only after one matures does it come to have a personal and particular meaning. Nature itself looks after that development. What the child requires and appreciates is an uninterrupted flow of sound knowledge, including sexual knowledge, into its expanding consciousness. To inject a large quantum of emotion associated with sexual knowledge is the beginning of that mischief which comes from artificial stimulation and resultant secrecy; then follow conflict, shame, remorse, and all the evils that morbid inhibitions and asceticism in later life can bring upon an individual and society.

Out of emotionalized states of mind induced in the young grow a good many of our stupidities and insanities regarding sex. Until our method of teaching changes we need look for no real improvement in our sex-life. Folly perpetuates itself from one generation to another. Moral exhortations swing between two extremes, holding up sex either as divine or as satanic, as the repository of all joy or of all woe. In truth, sex is only *one*

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fact of life, and not even the most fundamental. It is certainly no more difficult to understand than digestion. But give it an undue importance in the child's mind and you have laid the foundation for all sorts of distorted values in later years.

Especially in the case of boys is this method disastrous. When a romantic virgin or an unsatisfied wife and mother undertakes to give sexual instruction, her own dynamic libido gets constantly in the way of sound pedagogics. Such women are extremely self-conscious sexually. The most simple question of a child in the sexual sphere has a sexually stimulating effect upon them. Detached instruction is emotionally beyond them. To look upon sex for the time being as a biological process, therefore as an impersonal process, is for them an impossibility. To sublimate their erotic moods they preach homilies to the boys about the reverence and holiness and mystery one should feel in the presence of sex—and with them sex means "myself, woman." Thus is established in the boy's mind the same association: "sex, reverence, sacredness, holiness, mystery, *woman!*" Thus does the process of feminization of boys have its origin. Why women should be looked upon as essentially representative of things sexual and more worthy of honor and reverence than men, why maternity is holier than paternity or more mysterious, cannot be shown by reason or science. It is nothing more than superstition to regard the sexual functions of the human female as of infinite import and commanding reverence unbounded. That superstition is more deeply fixed in the American man's mind than perhaps anywhere else on earth. Woman as the angelic, the holy, the pure is just as false an evaluation as woman the evil, the corrupt, the unclean. Nowadays we hold to the first superstition, just as formerly it was thought that, as St. Chrysostom declared: "Through woman the devil has triumphed. Of all wild beasts the most dangerous is woman." Now we have reversed our position, even to the extent of allowing women to commit all the crimes in the calendar with impunity, even with applause, if their deeds of bloodshed have a considerable sexual element in them.

What the intelligent modern man and woman demand is equal risk and equal responsibility. In the main that is Mrs. Hartley's attitude, and is the general feature of her book that makes it worth while. It would be more encouraging for us here in the United States if the book had been written by an American woman and could circulate among American men. That would presage a better understanding of the sexual ques-

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tion than is today in prospect among us. The book is more urgently needed in this country than in England, where it would seem that there is less corruption of boys by insatiable females than here. That is why the average Englishman is more sane and enlightened in his attitude toward women than the usual run of American men—products as they are of an idiotic woman cult which has no justification in science, religion or philosophy. Its only excuse for being continued is that it enables certain types of female neurotics to gratify an insensate lust for power rather than a normal libido.

Mrs. Hartley's treatment of auto-erotism is wholly commendable. She succeeds in giving a conception of human nature which makes auto-erotism an incident in development, not a symptom of inborn wickedness and hopeless depravity. It is significant that in this connection all three of these excellent books on sex are in complete accord.

Portland, Oregon.

COLLECTED PAPERS OF THE MAYO CLINIC

1920 Collected Papers of the Mayo Clinic, volume xii, edited by Mrs. M. H. Mellish. Cloth, 1392 pages, 446 illustrations, $12.00. Philadelphia: W. B. Saunders & Co., 1921.

We requested the Brooklyn surgeon, Dr. Royale Hamilton Fowler, to review the latest volume of the collected papers of the world-famous clinic at Rochester, Minnesota, and he answered: "In point of fact, my vocabulary is almost exhausted saying nice things about the Mayos."

What else is it necessary to say? The work of the brothers Mayo and their associates represents the summit of modern surgical achievement, and the present volume is another monument to their fame.

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HISTORICAL MEDICINE

An acquaintance with the history of his science is, however, especially indispensable to the practical physician, if he would thoroughly comprehend and penetrate the secrets of his profession. To him, indeed, it is the bright and polar star, since undoubtedly it alone can teach him the principles of a medical practice independent of the currents, the faith and the superstition of the present. Moreover, it offers him as scientific gain, through the knowledge of the past, the measure for a just and well-founded criticism of the doings of his own time, places in his hand the thread by which he unites past conditions and efforts with those of the present, and sets before him the mirror in which he may observe and compare the past and present, in order to draw therefrom well-grounded conclusions for the future.

J. H. Baas.

1921 DECEMBER 28 Pages

SOMETHING ABOUT ORGANO-THERAPY

By Max Neuburger, M.D.,
PROFESSOR OF MEDICAL HISTORY, UNIVERSITY OF VIENNA

Organo-therapy and opo-therapy, inaugurated by Kocher and Brown-Sequard, have not only achieved a prominent place in practice during the past decades, but received at least a partial scientific foundation. Thus into modern therapy a therapeutic method has found admission which dates back to antiquity, back to epochs of the most primitive empiricism and crassest mysticism.

The use of animal organs or parts of organs, secretions and excretions for therapeutic aims can be traced back to the earliest phases of the development of mankind, among most peoples of the globe, in both folk-medicine and scientific medicine. The old pharmacology of the Chinese, the Papyrus Ebers, Pliny, Dioscorides and Galen constitute the richest mines of the organo-therapy of antiquity.

The medical books of medieval times furnish a rich supply, chiefly based on ancient essays. The learned medical works of the Renaissance period and of the seventeenth century show how greatly the physicians adhered to organic remedies and how much they endeavored to justify this use, at first by mystic and natural-philosophic explanations, and later on by rational reasons.

In the course of the eighteenth century, organo-therapy disappeared from scientific medicine; among the populace, however, it has retained its hold up to the present, connected with all kinds of mystic, particularly sympathetic ideas.

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The central thought which formed the real origin of the entire procedure may be found in the circumstance that it was believed to replace or improve a limb or a function of the affected individual by a corresponding part of the body, or corresponding functional product of animals. It is certain that this fundamental thought under the influence of prevailing religious and natural-philosophic ideas was very early and increasingly mixed with superstitious, demoniacal and mystic ideas, and in the course of time was downright overrun by these last. And consequently certain leading ideas of the sacrificial cult, of certain mystic views and real or supposed observations on the mode of life and capabilities of animals were decisive for the development of organo-therapy and for the selection made.

While modern organo-therapy takes only a few animals into consideration, particularly sheep, oxen and swine, the organo-therapy of antiquity and of the middle ages embraced nearly all the animal kingdom then known. Thus among others the following animal remedies were recommended: In epilepsy, the brain of the lion, of squirrels and of asses; in headache and dizziness, the brain of the owl and the raven; in insomnia, the brain of sheep; in heart affections, the heart of deer; for palpitation of the heart, the heart of the mole; in pulmonary affections, the lungs of fox and hare; for jaundice, liver complaints, cachetic conditions and dropsy, the liver (particularly gall) of asses, fox, hare, weasel, wolf and goat. Goat's liver was principally used for hemeralopia. In affections of the spleen and in fever, the spleen of fox, dog, ox or the cat was employed; for indigestion, the gizzard of chickens; for urinary affections and urinary calculi, the kidney of hares and dogs; for urinary calculi, the bladder and prostate of sheep and swine were also used. The testicles of hare, deer, horse and swine were used to increase generative power, to facilitate birth and in diseases of the genitals and the bladder.

In some of the examples just mentioned the relation to the fundamental ideas—particular qualities of certain animals, and organic functions—is quite transparent. Thus the lungs of foxes and hares were recommended for difficulties of breathing, while the heart of the lion and the cock's comb served for the attainment of courage. To cure hydrophobia, the use of the liver of a mad dog, consumed raw or cooked, or in the form of a broth, belongs to the field of isotherapy.

Vienna, Austria.

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The Posthumous Papers

of

FRANK BAKER

M.D., M.A., PH.D., LL.D.

Contents

I. Biographical Sketch
II. Chronology of Frank Baker
III. Bibliography of Frank Baker
IV. The Teaching of Anatomy
V. Phases of the Cellular Theory

Illustrations

I. Portrait of Frank Baker
II. The Handwriting of Frank Baker
III. Portrait of Schwann
IV. Portrait of Schleiden

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I—BIOGRAPHICAL SKETCH

By Victor Robinson, M.D.

The outstanding medical event of 1841 was the publication of Henle's *General Anatomy*. The new anatomical star shone across the water upon a cradle whose occupant was destined to follow Anatomy all his days—Frank Baker, born in the State of New York, in the summer of 1841. Since mathematics is an inexorable science, all children born in America in 1841 were twenty years of age in 1861. It was a fateful matter, for bugles were calling throughout the land, and thousands who were then twenty, never saw another birthday.

Frank Baker's ancestors had fought in the Revolutionary War, and young Baker answered the first call of the Civil War by enlisting in the Thirty-seventh New York Volunteers, serving during 1861-3. He was then transferred to Washington, where he remained for over half a century in government service. Here he made the acquaintance of two other government employees—John Burroughs and Walt Whitman. But unlike Baker, neither the Seer of Slabsides nor the Good Gray Poet possessed departmental temperament. Burroughs exchanged treasury notes for the notes of the robin, Whitman was expelled by an irate official for wroting *Children of Adam,* Baker became Superintendent of the Zoological Park, but all three, grown into famous men, were life-long friends.

Besides Frank Baker, several other American Asclepiadæ were of the vintage of 1841, among them being Francis Delafield, Edward G. Janeway, Frederick I. Knight, Frank P. Foster, Charles Smart, LeRoy Milton Yale, Albert Freeman Africanus King, Joseph O'Dwyer, James Tyson, and Horatio C. Wood. All these others entered into the doctorate with the freshness of youth about them, while it was not until 1880 that Baker received his M.D. It has been noted, at least from the days of Rhazes, that men who study medicine late in life, are apt to make up for lost time. When Frank Baker's diploma was only three years old, he was appointed professor of anatomy in the medical school of Georgetown University, a chair which he gracefully filled for the following thirty-five years. But like Oliver Wendell Holmes, who was likewise professor of anatomy for just thirty-five years, Baker made no practical contributions to the subject. With the exception, however, of two papers on the President Garfield case, Dr. Baker's earliest writings were in anatomy: *The Rational Method of Teaching Anatomy* (1884), *What is Anatomy?*

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Some Unusual Muscular Anomalies (1887), and definitions of anatomical terms in John S. Billings' *National Medical Dictionary,* and in Funk & Wagnall's *Standard Dictionary of the English Language,* both dictionaries appearing in 1890. Later writings in this field were: *Recent Discoveries in the Nervous System* (1893), *The Nomenclature of Nerve Cells* (1896), *The Anatomy and Physiology of the Ear* (1898-9), and *Progress in Anatomy* (1899).

Like many of the choice spirits in our profession, Baker was an anthropological enthusiast, being editor of the *American Anthropologist* (1891-8), and writing for its pages, *Anthropological Notes on the Human Hand* (1888), *The Ascent of Man* (1890), and *Primitive Man* (1898). In his devotion to anthropology, Baker recalls another Washingtonian—and after Robert Fletcher's death, Frank Baker was regarded as "probably the most erudite physician in Washington."

Professor Baker was a leisurely gentleman, and his initial contribution to medical history appeared when he was verging on seventy, *The Two Sylviuses: An Historical Study* (1909)—a theme which the fertile John Knott tackled the following year. Baker's reasons for undertaking this study should be given in his own words:

> A compilation of the authorities mentioned shows that it is the widely accepted opinion that Jacobus Sylvius made discoveries in the anatomy of the brain, that we especially owe to him the fissure, artery and aqueduct of Sylvius; that, besides these, there have at times been named as his discoveries, or in his honor, the Sylvian ventricle (fifth ventricle), the Sylvian valve (Eustachian valve of the heart), and the caro quadrata Sylvii (flexor accessorius muscle of the foot); also that he invented injection of vessels for purposes of anatomical demonstration.
>
> It would seem that these eminent authorities ought to have questioned such statements as these, in view of the well-known fact that the physiology of the brain was totally misunderstood until long after that period and that no great amount of attention was given to its structure by an any anatomist until the science was much further developed. Knowing that Vesalius, the pupil and prosecutor of Sylvius, was ignorant of most of these matters, it seemed to me strange that Sylvius should know of them, and some years ago I satisfied myself that the statements so generally current are wholly or partially wrong, and recently I have examined the works of Jacobus Sylvius and other authors in order to determine where credit should properly be given. I have found that the modern world, while exalting the discoveries of this man beyond what they deserve, has also done scant justice to his real merits, and for this reason I have prepared a brief account of what he really did and did not do.

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The essay is a valuable one, since Baker deprives Jacobus Sylvius of certain honors which he had falsely won throughout the centuries, and at the same time returns to him other honors of which Sylvius had been wrongly deprived.

The old Sylvius, long the bright star of the Paris Faculty, felt his lustre bedimmed by the growing effulgence of the young Vesalius. Incapable of feeling pride in the achievements of his pupil, the harsh old man wrapped the mantle of Galenism around him, and burning with zeal and rage, set out to destroy the new gladiator in the arena of anatomy. The past belonged to Sylvius; established reputation was his, and an army of students called him master, yet at a touch of the Vesalian scalpel he collapsed, bequeathing to posterity a name symbolic of avarice and bigotry. Even his pupils turned from him, and upon his unlamented decease, one of them scribbled with charcoal, on the walls of the church, an epitaph in Latin which Baker has thus Englished:

> In this grave lies old Sylvius, during his day
> He never gave aught without getting full pay;
> And though dead as a herring, so naught could be worse,
> He is vexed he can't charge you for reading this verse.

Doctor Baker's sketch is sympathetic—nothing that he did could be otherwise—and again we quote him:

> He had no wife to follow him to the grave, no family ties, no children to brighten his home and to love and cherish his memory. He was buried in the Cemetery of the Poor Scholars, and I think that if I had been in the funeral train when this poor scholar passed to his final peace I should, in spite of the jeers of the students, considering what we owe to him, have placed a wreath upon his coffin. Many such tributes were afterward paid to his memory. Here is one, written by a certain Johannes Sambucus:
>
> > Unto the barbarous throng he wisdom brought,
> > E'en in old age great crowds his teaching sought.
> > Our pharmacy he helped; by zeal for Galen led,
> > His master's faults he hid and showed his own instead.

In 1912, Baker published two more historical studies, and while they do not challenge accepted opinion as did the Sylvius essay, both of them are the best American accounts of the subjects which they treat: the *History of Anatomy,* published in Thomas L. Stedman's Reference Handbook of the Medical Sciences, and *The Faculty of Paris in the Seventeenth Century.*

The history of the Paris Faculty should be read by every medical student—and by certain professors—at the beginning, middle and end of every semester. It should serve as a warning against one of the most malign influences that ever blocked the progress of medical science. Doctor Baker mentions some of the

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DOCTOR FRANK BAKER

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day-long disputations which were propounded to the candidate, and points out that during the weary hours in which he was forced to pit his wits against the assembled faculty, men trained and exercised in subtle dialectics, the candidate was also required to furnish food and wine for his adversaries. Among the disputations were: Is it well to get drunk once a month? Are women imperfect works of nature? Are bastard children brighter than those which are legitimate? Should the phases of the moon be considered when we have our hair cut?

The Paris Faculty excluded surgery from the curriculum, and pursued with incredible malignity, every one who dared suggest that surgery was of equal rank with regular medicine; it expelled, with bitter rancor, any member who prescribed the new drugs, such as antimony, cinchona and ipecac; it opposed Pecquet's discovery of the thoracic duct, it denounced Aselli's discovery of the lacteals, and it forbade Harvey's demonstration of the circulation to be taught. The Paris Faculty believed in interminable readings, not in clinical demonstrations, and when the candidate—after infinite mental torture—finally received the cap and accolade, he was a full-fledged doctor, but had never seen a patient!

What would have happened had it not been for the genius of Molière? More than any other factor, the laughter of Molière was the savior of French medicine. Baker's description of Molière's work is so vivid, that if he ever met Brander Matthews, the two professors must have become old friends at once. The Paris Faculty aroused all the latent satire in Baker's nature, but he was neither a Molière nor a Mencken, and the most sarcastic words he ever penned are probably these:

> The result of all this exaggerated respect for learning, for books, and for authority was necessarily the formation of an ultrapedantic and conservative body, jealous of innovations, a foe to progress, and wedded to tradition. . . . The results of the narrow and bigoted attitude of the Faculty were very striking. Scientific medicine in France fell to a low ebb. While remarkable discoveries were being made in Holland, Germany, England and Italy, France remained unproductive. . . . May we not take warning from this? Is it not well for us even today to avoid placing too restricting fetters upon medical teaching? May not this minute supervision so insisted upon by the American Medical Association and other bodies lead to a lack of freedom and a restriction of personal initiative?

Crile, in his *Mechanistic View of War and Peace,* has taught us that man is a war-loving animal, and when he rushes upon his enemy to rend him and kill him, it is a super-normal soul-satisfying fling back in phylogeny. In his youth, Baker had participated in war, and in his old age the whole world was at war.

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Scarpa, Antonio

* Motta, village Friouli, June 13, 1747.

† Binasco n. Pavia Oct. 30, 1832.

Family poor and obscure -

Friuli belonged to Venetian republic

Ceded to Austria by treaty Campo Formio 1797

United to Kin Italy 1806.

Returned to Austria 1814.

Retains primitive manners & customs

Character distinct -

Friulian a Lombard dialect - Celtic -

50,000 speak it.

S. probably a vernacular.

While he spoke many languages preferred Lat.

Native Friulians

Titian

Cardinal Aleandro 1480 - 1542

1st Gk printing press at Paris

Favorite Francis I, Louis XII, Leo X

Legate & nuncio to Germany -

Don Paolo - his uncle, priest educ^d at Padua.

Educated S. at 14 sent to Univ. Padua.

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It had been planned to celebrate the 400th anniversary of the birth of Vesalius by international exercises at the University of Louvain—but that phylogenetic fling back cancelled the invitations. "It is sad beyond measure," said Welch, "to contemplate the situation which rendered it impossible to carry out that intention. However, in this country we have endeavored to do our best in the celebration of this event, exercises having been held in Boston, New York, Washington, and I believe elsewhere."

In Baltimore the exercises were notable, for at the Johns Hopkins Historical Club, a list of the works of Vesalius was exhibited: from the Surgeon General's Library, through the courtesy of Fielding H. Garrison; from the library of Henry Barton Jacobs; and from the Howard A. Kelly Collection of the Johns Hopkins Library. William H. Welch spoke on the contributions of Vesalius other than anatomical, Fielding H. Garrison on the personality of Vesalius, and Frank Baker on the relation of Vesalius to anatomy. Doctor Baker illustrated his remarks with numerous lantern slides, showing the great contrast between the *Fabrica* and previous traditional works on anatomy. He dwelt on the influence of the Vesalian illustrations on subsequent anatomical illustrations, and then showed the drawings of Leonardo da Vinci, contrasting the work of these master anatomists.

Doctor Baker was a most delightful talker, and even when a manuscript lay before him, he was apt to be extemporaneous. His *History of Body Snatching* (1916), illustrated with his lantern slides, was not written out, and was never prepared for publication. As an indication of Baker's character, it should be remarked that these valuable slides, gathered of course after considerable effort, were always at the disposal of others.

These few contributions which we have noted constitute Baker's literary output—an astonishingly small bibliography for a man of his knowledge and years. Baker furnished little material for Minnie Wright Blogg. It is rather curious to reflect that one of the most book-learned men of the time was nevertheless one of the few men of the time who never wrote a book. Such erudition, combined with such diffidence, recalls Osler's suggestion to Clevenger: "We write too much." If ever a man wrote too little, that man was Professor Frank Baker.

In his modesty and simplicity, in his readiness to praise the work of others, and in his qualities as an ideal teacher, Frank Baker resembled his more prolific fellow-anatomist, Harrison Allen. "Old fogyism begins early," said William James. This widespread disease never overtook Frank Baker. In appear-

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ance, Baker has been described as "a man of goodly height and presence. His fine head was remarkably like that of some of the great anatomists of the past, notably Quain and Sir Richard Owen."

In his study of the elder Sylvius, Doctor Baker wrote: "At seventy-seven years of age the grim visitor whom all must meet approaches our soured and melancholy old man." Centuries later the same Grim Visitor approached Frank Baker also at the age of seventy-seven, but this time it found, not an embittered reactionary trying to turn back the tide of progress, but a lovable veteran sitting with his face toward the sunrise. Death touched him on the last day of September, 1918, ending the career of a gentleman and a scholar.

Upon his decease, it was found that Professor Baker had left behind him three unpublished manuscripts—*Antonio Scarpa, The Teaching of Anatomy,* and *Phases of the Cellular Theory.* It was the wish of his widow that these papers be published.

The Scarpa MS. is a series of notes, interesting as showing Baker's method of composition, but unsuitable for publication in its present form. However, we shall utilize these notes as a basis for an essay on Scarpa which is scheduled to appear in these pages during 1922. The *Teaching of Anatomy,* and *Phases of the Cellular Theory,* appear in the present issue.

In preparing Frank Baker's posthumous papers for the press, turning over the sheets that once lay beneath his hand, seeing his writing in pen and pencil, noting his emendations and corrections, the man seemed very close to us, and to his learned spirit we inscribe this epitaph:

The scholar had a visitor so grim,
Who put aside the scholar's books and pen;
But now that visitor must yield to him—
The scholar in these pages lives again.

II—CHRONOLOGY OF FRANK BAKER

1841. Born August 22, at Pulaski, New York; son of Thomas C. Baker and Sybil Weed Baker.
1861-3. Sergeant, 37th New York Volunteers.
1873. Marriage to May E. Cole, of Sedgwick, Maine (September 13).
1880. M.D., Columbian (now George Washington) University.
1881-2. First contribution to the medical press (President Garfield's case).

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1883. Professor of Anatomy, Georgetown University (for thirty-five years).
1888. A.M., Georgetown University.
1889. Assistant Superintendent, United States Life Saving Service.
1890. Ph.D., Georgetown University.
Superintendent of National Zoological Park, D. C. (until 1916).
Secretary of Washington Academy of Sciences (until 1911).
Vice-President, American Association for the Advancement of Science.
Contributor of anatomical definitions to dictionaries.
1891. Editor, the *American Anthropologist* (until 1898).
1897. President of the Association of American Anatomists.
President of the Anthropological Society of Washington.
1909. First contribution to medical history (The Two Sylviuses).
1914. LL.D., Georgetown University.
1915. President of the Medical History Club of Washington.
1918. Death, at his residence, September 30; survived by widow and six children; his son, Lt.-Colonel Frank C. Baker, Medical Corps, U. S. A., was in France.

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21. The Teaching of Anatomy, posthumous paper, published in the Frank Baker Memorial Number of MEDICAL LIFE, December, 1921.

22. Phases of the Cellular Theory, posthumous paper, published in the Frank Baker Memorial Number of MEDICAL LIFE, December, 1921.

23. Antonio Scarpa, posthumous notes, to be published in a future issue of MEDICAL LIFE.

IV—THE TEACHING OF ANATOMY

By Professor Frank Baker

[EDITORIAL NOTE: Dr. Baker's paper on the Teaching of Anatomy was left in pencil, with the pages unnumbered, but had evidently undergone some revision, since certain passages were crossed out and others superimposed. In the first draft there is a suggestive statement, later omitted, about Bichat, which is worth saving: "Bichat, who was as skeptical about the microscope as Paracelsus was about galenical anatomy but who nevertheless managed to put us on the right road regarding the tissues

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of the body." This paper exhibits Professor Baker at his best; it shows his lifelong enthusiasm for his chosen work, and his unflagging interest in young men and new ideas. The Teaching of Anatomy is an inspiring last message, and it is a privilege to present it to the profession.]

The attitude of the medical profession toward the teaching of anatomy has varied from age to age. Paracelsus declared the value of anatomy to be a delusion, and dissection to be a boorish method from which came most of the errors found in medicine, and wholly useless, as death can never disclose the secrets of life. In 1525 he burned before his class the leading anatomical works of his day. Soon after this the young Vesalius, "most dextrous in the dissection of bodies," overthrew the old teaching and demonstrated beyond dispute the value of anatomy in both medicine and surgery.

The impulse then given has never been lost and the anatomization of the human frame has been pursued with an ardor unequalled in any other realm of scientific research. I have often heard even professional men express surprise that there can be any new discoveries in anatomy. It seems to many that it must be a science thoroughly worked out.

Yet it is a fact that today the unexplored field stretches out quite as wide, quite as vast as it did to Vesalius, and that every year patient investigators are adding to our knowledge, building foundations for wider generalizations, for more certain grasp of the mysteries of structure. We are even drifting back to a point where we may see that Paracelsus was partly right and that in its ultimate analysis the living body probably possesses features of structure never found in the dead one.

The great pioneers of the 16th and 17th centuries ascertained fairly well the gross structure of the body; they showed of what organs it was composed and *how* these were arranged. We are now engaged in trying to find out *why* they are arranged in this manner, to determine, in fact, the laws of structure.

It was mainly during the 19th century that this change of attitude occurred. Bichat opened the century with his epoch-making classification of the tissues, Schwann carried this farther with his cellular theory, Virchow with his application of this to pathology, Baer with his discovery of the development of the ovum, and finally Darwin and his followers showed that the anatomist must no longer restrict himself to the limits of a single species, even if that species be that of man himself; if he would adequately understand his own structure he must search through

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the whole realm of living things to discover its different modalities. With every new discovery the scope of the science has slightly changed, and little by little the whole attitude of the anatomist has been modified.

Some of us are old enough to remember when but little of this new anatomy was mentioned from the chairs of a medical school. The former two-year course of lectures was mainly based upon the excellent surgical anatomy of Gray (other literature being rarely mentioned) with a somewhat perfunctory dissection and an occasional glimpse at a microscope. There were no special courses in histology, embryology and osteology, and the time spent on all anatomical studies did not exceed half that required in our schools today.

This extension of the course is due not only to the greater scope of the modern study, but also to a recognition of the immense importance which it has in every department of medicine. Physiology cannot interpret the phenomona of life without a knowledge of structure, nor can pathology have any other rational basis for its interpretation of disease. A rational therapeutics must necessarily concern itself with the structural mechanism, physiological chemistry and physics depend upon a minute and ultramicroscopic anatomy that deals with molecules, atoms and ions, the hypothetical elements that at last analysis compose the body in common with all other matter. In all the practical branches—surgery, practice, obstetrics and their associated chairs —anatomy has ever been the chief scientific basis, but more so now than ever since we realize how close is the relation between man and other living forms.

The fact is now borne in upon us from all sides that the modern physician must be an investigator, capable of original work. He may at any time be confronted with quite novel problems in which he will find little to guide him in the literature at his disposal. He must be able not only to manipulate the scalpel, the microscope, the reagents of microscopical technique and the instruments of the pathological laboratory, he must also be competent to interpret what he sees and, if necessary, to devise new methods of investigation and research.

When we consider the great advances that anatomy has made during the latter half of the 19th century, how it has become the basis of almost every branch taught in the medical curriculum and has acquired profound relationships with all other biological sciences we will, I think, be inclined to admit that no narrow methods of instruction should prevail. A textbook should only

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be used as introductory means, the real authority is, as Vesalius long ago affirmed, the living human body with its infinitely complex organization which with all our efforts still baffles us and makes us feel that we are as yet only at the threshold of our knowledge.

All teachers of anatomy have doubtless felt somewhat perplexed at the problem placed before them at the outset of the anatomical course. The new class is composed, at most medical schools, of men of merely high school training not always as good as it should be, often without any knowledge of biological topics, only imperfectly acquainted with the learned languages, usually with no modern language but their own. Into the hands of this class there is placed a textbook of a highly technical character—rather let me say a cyclopedia of anatomy—where there is no attempt to lead the student along by progressive steps, but he is flung at once into the sea of knowledge and must sink or swim. Besides this, in the great majority of schools he has had no previous experience whatever of the university method of work. Set lessons, class recitations, mere book work he is used to, he knows not how to go alone, to work alone, to investigate for himself, to think for himself.

It usually happens that a student is seriously discouraged at the outset by the strange terms he meets and the great difficulty he has in understanding what he should do. Sometimes he gives up in despair and abandons the study of medicine altogether. Obviously he should be put to work at once with his hands and eyes in order to counteract this tendency.

This is much more important than lecturing to him. The tongues of angels would be needed to explain the elements of anatomy to a man without biological knowledge or training. The French psychologists have made a distinction between men that acquire knowledge more readily by ear—an "auditaire" and those that acquire it more readily by eye—a "visionaire." I have never met an 'auditaire." The eye—the older sense phylogenetically—is the one upon which we rely most quickly and certainly for information.

A beginner should be placed at once at modelling from the bones for his gross anatomy, and at an examination of the simpler histological elements of the body for minute work. Also at simple laboratory work in embryology. A general outline of the cell theory and of the development of the ovum should be given in lectures made as simple as possible. Drawings should always be made of all microscopic specimens, and as soon as a general

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view has been completed the student should prepare a succinct statement of each subject.

A word should be said here about drawing and modelling. Many students have great distrust of themselves in this—saying that they have had no instruction in anything of the sort and can do nothing.

Now it is quite true that any student that can learn to write, can draw or model sufficiently well for all the purposes that are required in a medical course. The aim is not to produce finished artists, but to assist them to *see* what is before them. For this reason a criticism of their drawings from an artistic point of view should be avoided. Mere outlines are sufficient, elaborate finishes should be discouraged as taking too much time unless, as is usually the case, some students have special facility in such work.

Didactic lectures should always be elaborately illustrated, and preferably by charts that hang upon the wall during the entire lecture, or perhaps remain there for some time afterwards, accessible to inspection. In choice of illustrations for these lectures it is obviously better to choose such as will supplement and extend those with which the class are familiar in the text-books they are using.

Methods of instruction in anatomy have, like other branches of instruction, undergone a development. In early times an anatomical investigator was an isolated specialist, an enthusiast who was able to overcome the almost insuperable obstacles that surrounded free investigation by the force of a superior will. Very, very few possessed themelves of any real knowledge of the structure of the body, and those who did were regarded with reverence and awe, their dicta were accepted without question, and the mass of medical men were content to rely upon their written words without attempting to gainsay them.

Under this system the teacher sat upon a lofty chair and expounded from some authoritative book while an inferior assistant made some rude and unskilful demonstration, usually upon the body of a dog or a pig, rarely upon that of man. Neither teacher nor students ever touched the cadaver; it was sufficient to read the description made by some great authority.

This ex cathedra method of teaching received a severe shock when Vesalius, the founder of modern anatomy, dared to come forth boldly and himself dissect in public, exposing the errors of the ancients and demonstrating the structure of the body.

While his example led to the innovation that at teacher of

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anatomy was expected to be an original investigator, it did not at first have a marked effect upon the student body. The method of teaching employed up to the early part of the 19th century may be seen in the well known picture of Rembrandt entitled the Lessons in Anatomy, in which the learned Dr. Tulpius arrayed in an elaborate lace collar and cuffs is lecturing to a class of surrounding students, each dressed in a similar manner, upon the structure of the muscles of the forearm. Not one of the class was required to handle the scalpel, and it was only exceptionally that the actual practice of dissection was undertaken by any but the teaching staff.

The great political upheaval in Europe caused by the French Revolution had a great effect upon intellectual pursuits and upon all departments of education. Less respect was paid to authority, more regard was had for individual initiative. Science became *secularized*, so to speak; that is to say research began to be allowed and even prescribed for all students desiring to pursue it. Now real anatomical laboratories were established. Dissection was made compulsory for all students in most of the continental schools at the close of the 18th century.

Old systems die hard, and it is easy to note in the anatomical instruction of the present day traces of the old ex cathedra style of teaching. Many of us who were educated twenty or thirty years ago remember the exaggerated respect that was given to the text-books of the period. Some practitioners still are found who hold that the entire sum of anatomical science is contained within the scope of Gray's Anatomy, and who look with suspicion and distrust upon more modern methods of teaching. They have no true conception of the immense expansion of the anatomical field that has occurred from treating anatomy as a biologic science, but really consider it as a mere adjunct to surgery, a dry, wearisome detail of forms and relations, a mechanical arrangement of facts for practical use. To such a person an authoritative text-book is indispensable.

Unfortunately the infinitely complex and highly variable human body does not lend itself well to iron rules of classification and description. Constant variations in development, in the influences of heredity, environment, and of disease cause corresponding variations which must be studied and realized.

Besides this, the modern student must early be made to understand the intimate relations that exist between anatomy and the other biologic sciences. No correct physiological conceptions

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are possible unless they are based upon anatomy. One might as well try to understand the working of a steam engine without a knowledge of its valves and pipes. Therapeutics, whenever it is not frankly empirical, and it becomes scientific only as it divorces itself from empiricism, must be based upon anatomy and physiology. Pathology is the anatomy and physiology of disordered action, practice an application of these principles, physiological chemistry a sort of transcendental anatomy and physiology—the anatomization and behavior of these minute structural units called atoms and molecules. Obstetrics and gynecology are merely offshoots from practice whose anatomical features are especially important. Anatomy is obviously the basis of surgery.

The old proverb says that to learning there is no royal road, but for the student who today essays the study of anatomy there lies open a road royal indeed. Our question is how to best conduct him to it and how to make him find his way along it.

The first task in a medical course falls to the teacher. This is to change, absolutely, the point of view of the ordinary student toward his studies. From viewing them as abstractions, matters to be regarded possibly important but entirely foreign and outside of himself, he must come to feel them in the concrete, essential and belonging to his life. Until this is accomplished all our teaching is as sounding brass and tinkling cymbal.

For centuries the aim of the instructor was to teach how to deal with the living body safely and judiciously; anatomy was in a manner the handmaid of surgery, medicine and obstetrics. It is not always realized that during the latter half of the 19th century a change in this point of view has been gradually brought about. While no one at the present day would wish to disregard in the slightest the practical applications of our science, it has now a loftier aim, a more comprehensive purpose than was dreamed of by the earlier anatomists.

V—PHASES OF THE CELLULAR THEORY

By Professor Frank Baker

To an association of biologists it is unnecessary to insist upon the importance and significance of cells. The cellular theory, as dimly foreshadowed by Malpighi and Robert Brown, formulated by Schleiden and Schwann, and developed by Virchow, Leydig and Max Schultze, is too well known to you to need any restatement of its terms. It is only with the remarkable developments and the extraordinary speculations of quite recent times that it will be proper for me to deal tonight.

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To Haeckel, in 1866, the lowest organized living form was simply a mass of protoplasm endowed with vital properties, the cell-membrane and the nucleus having been successively dismissed as non-essential elements. Protoplasm was considered as a homogeneous, semifluid substance with little or no trace of organization, whose chemical constitution was only approximately known, but was believed to be highly complex. Some daring spirits ventured to surmise that it might be possible to produce protoplasm in the chemical laboratory.

The elaborate investigations that have been undertaken since these early views have only tended to show more and more that such a pretension is farther and farther from realization. The more protoplasm is investigated the more evident it becomes that it is not only a highly complex body, but that it is of an almost unimaginable instability, that instead of it being a single definite compound that we can submit to investigation by the usual methods of analysis, there are countless multitudes of protoplasms that vary not only in different species of animals, but in different individuals of the same species, nay, in the same individual at different times and under different stimuli. It is as hopeless to attempt to fix this protean compound as it would be to try to heap up sand tossed hither and thither by the action of the waves.

Certain of the compound bodies derived from protoplasm have been sufficiently isolated to be submitted to chemical analysis. Of these we may take albumen as an example. Its formula, as developed by Schutzenberger, is shown by the diagram on the board. Its hypothetical character will be at once noted. In an attempt were made to represent this stereometrically, as should be done to express the real relations of the atoms in space, it would appear still more complicated. This is only one out of many bodies of this nature. The substances of which protoplasm is composed are, in fact, the most complicated bodies known. There seems to be no doubt that the protoplasm of the living body is much more unstable than that of the cadaver, which, indeed, very inadequately represents its chemical activities. From our present knowledge it would appear that a distinction should be made between those carbon compounds that are the results of secretion and excretion such as sugar, urea, and many other so-called *organic* bodies that have been successfully produced in the laboratory, and those substances which like protoplasm and its derivatives appear to be produced by the slow and peculiar processes of biotic growth, and which may for the sake of distinction

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be termed *organized* bodies. My attention has been called to this distinction by Mr. H. Carrington Bolton.

It is not only in its chemical composition that the almost infinite variability of protoplasm is shown. Its morphologic character was soon found to be much more complex than had been supposed. We will speak first of the general features of the protoplasm of the cell-body. First granules were observed, then striations, then vacuolisations. The appearances being often contradictory and varying much with varying conditions, it is not surprising that they led to diverse views with reference to structure. These are by no means settled as yet, but they may be succinctly grouped as follows:

1st. The *reticular* theory, first brought clearly forward by Heitzman in 1873, and still maintained by a great number of cytologists, under various modifications. According to this all protoplasm is composed of two substances, a more solid net-work —the cytoreticulum or spongioplasm,—and a more fluid interstitial substance,—the cytolymph, hyaloplasm or enchylema. The granules observed in cells, when not foreign inclusions or masses of dead protoplasm, are the intersections of this network. There is no doubt but that the great majority of cells, when fixed by the usual methods and treated with staining reagents show some traces of such a reticulum.

2. The *filar* theory, advocated by Flemming, who by studying cells unaffected by reagents concludes that they are structurally composed of free threads, the cytomitom, not combined into a reticulum but often containing numerous nodosities.

3d. The *granular* theory, first brought forward by Arndt, and afterwards advocated by Altmann. This supposes protoplasm to be formed of granulations embedded in a homogeneous basis substance. These granules, Altmann's bioblasts, are held to be themselves morphologic units of a still lower order than the cells. Special means of preparation are required to demonstrate them.

4th. The *alveolar* theory, of Butschli and his school, who hold that the structure of protoplasm is like that of a fine viscous froth or foam, that is to say, composed of alveoli with extremely thin walls. This structure is believed to be a physical consequence of the peculiar conditions of tension and surface flow possessed by the substance, and may be imitated by emulsions of thickened oil and various salts. This view attempts to explain the appearances that support the other theories either by the optical conditions under which the alveoli are viewed, or by the action of the reagents employed. To demonstrate the alveoli in perfection the

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protoplasm must be living, and the best attainable optical conditions secured. Under such circumstances they are seen to actively change their forms and relations to each other, these phenomena being so swiftly evanescent that it is impossible to accurately represent them by a camera drawing,—while the hand is tracing one part another is swiftly changing. Mrs. Andrews, a recent writer and observer, aptly says that it is about as practicable to represent them as it would be to trace upon a wall reflections thrown there from disturbed water. This theory has been quite rapidly gaining ground during the last few years.

Attempts have been made to reconcile these conflicting views. Koelliker, whose long life has been almost wholly spent in microscopic work and who undoubtedly has the widest experience of any one now living, considers that the different appearances are due to different states of development of the protoplasm. In young cells he supposes it to be homogeneous and without structure, formed of a mixture of various substances possessing different degrees of contractility and solubility in acids. In such a medium vacuoles will sooner or later appear; if these are numerous and small the structure of the protoplasm will be alveolar, if the walls of the alveoli break it becomes reticular, if the threads of the reticulum break it becomes filar. Doubtless this view may assist us in certain interpretations, yet it must be said that recent observations tend to show that even the earliest ovum does not possess a homogeneous structure.

We have hitherto considered only the general structure of protoplasm. It will now be necessary to discuss certain differentiations that it may exhibit. The chief of these appears to be the nucleus, a body early recognized, known in fact to Leeuwenhoek before the cell-theory was established, but which has assumed a quite extraordinary importance in recent times. It was not until carmine staining was invented (1854-1858) that a clear conception of the differential character of the nucleus was attained. It contains a material which, having an active affinity for coloring matters, was named Flemming *chromatin*. The *form* of nuclei was at first considered important, but has been shown to be inconstant. While usually ovoidal they may be of almost any shape may be divided into several masses or indeed be diffused throughout the protoplasm of the cell-body. This has led to the discovery that the possession of a nucleus is a more constant feature of the cell than was at one time supposed. Indeed, it now seems probable that every cell has had a nucleus at some period of its existence, and the moner of Haeckel and others

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retires more and more to the background. When a cell is deprived of its nucleus it may still show movement and live for a considerable time, but has no power to assimilate, grow or reproduce itself. The nucleus appears therefore to be an organ essential to the nutrition of the cell.

The discovery of the intimate structure of the nucleus, though full of interest, is too long to be recounted. While varying in different organisms, as may be supposed from what has been said, there are certain analogies to the structure of the protoplasm of the cell-body.

1st. A network, the nucleoreticulum, or karyomitom, composed of two quite distinct elements, chromatin or colorable matter already mentioned and linin, a substance not easily stainable, similar in character to the substance forming the reticulum of the cell-body.

2. A more fluid element, the nucleolymph, karyolymph, nucleo-hyaloplasm, nuclear sap, left unstained by dyes.

3d. A nuclear membrane or wall separating the nucleus from the surrounding cytoplasm of the cell-body.

4th. The nucleoli, objects of diverse natures that are colorable by staining reagents, sometimes free, sometimes, apparently, thickenings of the network.

Under certain circumstances, particularly when the cell is about to undergo division, the nuclear network breaks up into finer divisions that lead us to certain definite ideas as to its constitution. First, we find its complicated pattern becoming simplified, collateral branches being withdrawn into a main thread which becomes thickened thereby, the spirem. This then breaks up into a series of rod-like fragments, the chromosomes, which themselves appear to be composed of small granules, the chromomeres. These structures we shall find to be very important and constant elements, persistent from the ovum down to the most ultimate division. They are the much talked-of *ids* of Weismann.

Among the most noted discoveries of recent times is that of the centrosome, a minute granule that usually lies in the cytoreticulum, though believed by some to be extruded from the nucleus, in which it is, in fact, sometimes found. It is variable in its appearance and often surrounded by a spherical mass called by its discoverer, Van Beneden, the attraction sphere. From the centrosome or its envelope radiate delicate threads of archoplasm, a substance which, according to Boveri, differs chemically from ordinary protoplasm. The centrosome has been found in nearly

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MATTHIAS JACOB SCHLEIDEN (1804-81)

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THEODORE SCHWANN (1810-82)

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all cells, and since it divides as do the nucleus and cell-body, it is held by most cytologists to be a permanent organ. It is said, however, to sometimes disappear in mature cells. We shall see that it undergoes changes in cell-division co-ordinate with those of the nucleus. Many recent observers have described appearances in it that rather lead us to consider that its importance has been overestimated, and that it is merely a reticular knot brought specially into notice because it lies in at the convergence of radii.

The nucleus and centrosome are not wholly alone in their capabilities of growth and division. Certain bodies termed protoplasts or plastids may frequently be found in the cyto-reticulum that appear always to arise from the subdivision of similar pre-existing bodies. These apparently have some relations to the functions of the cell, as they seem to be concerned in the production of certain organized matters.

In order to understand the more recent speculations as to the constitution of cells it is necessary to refer briefly to the peculiar phenomena accompanying cell-division. This will be more fully discussed by some of the other gentlemen, and I may perhaps assume that you are already somewhat acquainted with the subject. I shall therefore merely pass rapidly over the different phases of this complicated process, first reminding you that two forms of division are recognized, first, indirect division, or mitosis occuring by far the greater number of instances and invariably while cells are actively growing and forming new tissue, and second, direct division, or amitosis, occurring when the vitality of the cell is exhausted, and probably never leading to the formation of tissue in considerable amount. I show you now on the screen the special phases of mitosis.

From the extremely regular manner in which this process goes on and the exact subdivision of the chromosomes into two equal portions one of which goes to each daughter cell it has been thought that some special material important to preserve and transmit must be involved. In lowly organized plants and animals a very small fragment of the body will grow and reproduce the parent. Even when the animal consists of but a single cell this renewal may take place. In animals somewhat higher a member cut away is readily renewed in its complete form by a process of reproduction from the cells of the stump. While this property is by no means as active in the higher animals where the cells are more specialized, yet it is true that small portions of a tissue may be renewed by reproduction from the surrounding cells. We know also that every cell in the human body descends through re-

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production by fission from the fecundated ovum, which, as will presently be seen, is formed from two distinct cells, one derived from the body of the male the other from the female, and that the resulting body, a complex formed from these two cells by repeated fission, shows remarkable resemblances to the parents from which it sprang. Considerations like these led Nageli to assume that the cell contains a special and peculiar material which belonged to the original parent cells and which controls and directs the economy of the cell so as to make it resemble not only the cells from which it sprang or with which it is immediately associated but also to bring about the resemblance to the parent which constitutes the real specific character of the individual. This material he calls *idioplasm* and he supposes it to be made up of certain biologic units which are themselves composed of combinations of micellae.

The peculiar behavior of the chromosomes in division has led Hertwig, Weismann and others to locate in them this idioplasm. Upon this theory then the nucleus must contain the essential constitutents of the cell and also that upon which hereditary transmission depends.

In order to discuss this farther it becomes necessary to examine the phenomena of fertilization.

The male cell and the female cell have already been prepared for this process by a so-called "reduction division" by which each has lost one half its number of chromosomes. At first we see the spermatozoa entering the envelope of the ovum, then one of these finally succeeds in penetrating the cyto-reticulum, approaches the prepared nucleus of the female cell and the two interblend. The compound nucleus so formed then begins to divide with the usual phases, one half the choromosomes derived from each patient nucleus passing to each of the subdivisions. It will be seen therefore that each cell of the resulting division contains an exactly equal amount of chromatin derived from each parent.

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MEDICO-HISTORICAL NEWS

Professor Karl Sudhoff, of Leipzig, has honored us by sending us two autographed photographs of himself, one taken in 1901 and the other in 1911. These photographs will be published in MEDICAL LIFE in connection with a sketch of the life and work of this world-renowned scholar.

In a letter recently received from Professor Max Neuburger, of Vienna, he says: "The living in Vienna is shocking, all is becoming worse from month to month! It is not possible to buy the most necessary things." In this connection, we ask our subscribers to read and heed the appeal on pages 511-14 of our October issue.

On January 11th, 1830, Alden March, professor of anatomy and physiology in the Vermont Academy of Medicine, delivered a "Lecture on the Expediency of Establishing a Medical College and Hospital in the City of Albany." Dean Ordway recently retrieved this pamphlet from the musty archives of the Albany Medical College, and republishes it in the Albany Medical Annals, July, 1921.

We are informed by James Alfred Spalding, of Portland, author of "The Life of Lyman Spalding," that last January he completed a set of the Lives of the Founders of the Maine Medical Society of 1820. Dr. Spalding writes: "There must be as many as seventy anecdotic lives therein." We regret to learn that the State has made no provision for the publication of these Lives, and the manuscript is at present deposited in the State Library.

CONTRIBUTORS TO THE NEUBURGER FUND

For information regarding the Max Neuburger Fund, consult the October issue, pages 511-14. Professor Neuburger writes: "Tell your contributors that I am exceedingly surprised at their gifts, and that I shall never forget their humanity and charity."

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E

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F

Fellows Medical Mfg. Co.....xiii
French Lick Springs Hotel Co. ...ix

H

Harris Laboratories iv
Horlick's Malted Milk Co.....ix

I

Intravenous Products Co.
xx, Back cover

K

Katharmon Chemical Co..... ..xxi

M

Marvel Co. i
Mellier Drug Co.....i
Metz Laboratories, H. A.....xii

N

N. Y. Intravenous Laboratory ..xxiv

P

Parke, Davis & Co.....iii
Peacock Chemical Co.....xi
Plessner Co., Paul.....xxii
Purdue Frederick Co.....i

R

Robinson-Pettet Co. vi

S

Sherman, G. H. (Dr.).....xxii
Smith Co., Martin H. .....xx, xxii
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CASE REPORTS (*Names on request*)

CASE No. 263, admitted March 2d, 1921, with Urethral discharge and Gonococci present. He was treated with Urethral Seals of Iodized Dionol and discharge entirely disappeared by March 10th.

CASE No. 32, admitted January 15th, 1921, Urethral discharge SINCE 1919. All methods and drugs used. Treated by several physicians. Urine cloudy, shreds, purulent discharge, gonococci present. Daily anterior and posterior instillations of Iodized Dionol. January 30th no gonococci found. 1-10,000 Silver nitrate irrigations every two or three days. February 15th, urine clear, no gonococci.

CASE No. 206, female, admitted with extensive vaginitis and cervical erosions. She was treated from September 21st, 1920, to October 18th, 1920, with a well known Colloidal Silver preparation, tampons (Sol. 20 per cent) with no signs of improvement. On October 25th we began using Iodized Dionol tampons, with immediate favorable results. Ulcers and discharge were completely eliminated by November 11th. Since then she has reported to me for examination five times and each time I could find no discharge and all smears were negative for Gonococci.

PRICES per single tube or jar, $1.50 each, or $1.25 each if in half dozen lots or more. Iodized Dionol is not yet carried by your druggist. Ask him to order for you, or order and remit direct to us temporarily. Samples and literature on request.

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MONTHLY NOTES

WATER-SOLUBLE YEAST VITAMINE

SOME CLINICAL APPLICATIONS, WITH CONCRETE SUGGESTIONS FOR PRESCRIBING IN CASES OF INFANTS AND GROWING CHILDREN, CONVALESCENCE, TOXIC INFECTION, RHEUMATISM, NEURITIS AND GOUT.

Yeast Therapy: The tremendous importance of Yeast as a therapeutic agent has recently attracted a renewed interest on account of the discovery that it contains such large amounts of the stimulative, essential food-factor, water-soluble-B vitamine.

In Yeast Feeding, or in the administration of fresh cultures of yeast for therapeutic purposes, the chief active and curative agent is the water-soluble Vitamine contained within the cells of living yeast.

Until recently, it has been the practice to feed the fresh, whole yeast in cases of deficiency of this vitamine. This method is no longer necessary since simple processes have been discovered whereby the vitamine contained within the yeast cells can be extracted therefrom, in highly concentrated form, and removed from the other, inert, inactive and deleterious substances contained in yeast.

The Concentrated Vitamine: The active, tonic, stimulative vitamine is a very small part of the entire, moist yeast and it is no longer necessary to consume such large quantities of this fermentative substance, in the crude form, to obtain a large dose of the active principle.

Since a complete diet in any case *must include a sufficient amount of water-soluble-B Vitamine, a* standardized, concentrated product of this character offers a definite substance of known value which *can be added, in precise amounts,* to any fixed diet.

Clinical Applications: Infants and Growing Children: It has now been demonstrated that a complete diet for infants must contain all of the known Vitamine substances, otherwise normal growth and development will either lag or cease. Osborne and Mendel, Ferry, Byfield and Daniels, and others have shown that many foods for infants made upon a basis of modified cow's milk contain *too little water-soluble Vitamine for normal growth.* This is because different milks vary in their Vitamine content; also because the practice of diluting cow's milk with water further dilutes the water-soluble Vitamine—in many cases to a hazardously low value.

Upon diets containing too little water-soluble Vitamine we have observed that a large number of infants maintain a constant weight or show very small weekly gains and that when water-soluble Vitamine was added to their diet without other change,

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growth was immediately resumed with most striking and gratifying results. Yeast Vitamine-Harris Tablets offer the concentrated water-soluble Vitamine from yeast, in exact, weighed, standardized amounts, convenient for addition to the daily formula for an infant. The smallest infant should receive not less than two tablets in twenty-four hours, broken and crushed dry, dissolved in boiling water and added to the food, but not cooked therewith.

Convalescence: During convalescence from disease or surgical operation the systemic vitality is at a low ebb and rapid recovery depends to a large extent upon the quality and character of the nutrition.

In the majority of cases, the body is reduced in weight, the appetite is poor and the circulating blood shows a low hemoglobin and red cell content.

In many such cases reported to us, regular daily feeding with water-soluble yeast vitamine has shown a remarkably stimulating effect upon the appetite, which has caused a greater daily intake of common food, in the majority of cases, by a steady gain in weight, together with an improvement in the content of the circulating blood and a very noticeable gain in the general, metabolic activity.

Infection Toxin: The progress of an infection with pathogenic bacteria and the prognosis depends very largely upon two factors; the virulence of the infecting organism and the opsonic index of physiological resistance of the infected host.

The former factor is beyond our control, but can often be regulated to a large extent by neutralization with an anti-body; while the second factor of body-resistance can be greatly *strengthened by proper nutrition.*

In a variety of such cases, Yeast Vitamine-Harris Tablets, given three times daily, two tablets each, a half hour before meals, have aided greatly in stimulating a sluggish appetite, with the result that the patient has been able to consume and assimilate more nourishing food. The Vitamine has not only shortened the active course of the disease but has many times proven its use as a valuable adjunct to an otherwise complete diet during convalescence.

Rheumatism, Neuritis and Gout: When cases of Rheumatism, Neuritis and Gout are attributable to hyper-sensitiveness towards certain food products, a definitely planned and sharply defined dietary regime is often prescribed.

We have had reported to us in many cases of this character where the individual has suffered from a secondary result of receiving a diet deficient in Vitamines and other essential food factors. This resulted in a loss of body weight and a lowering of resistance toward infection.

In prescribing specific diets for these purposes, it is highly important to include a full portion of water-soluble Vitamine and this has often been attempted by adding to the diet liberal amounts of whole yeast.

While yeast is a very rich source of water-soluble Vitamine it is strictly contra-indicated in the above cases because yeast cells are rich in nucleo-protein substances. These nucleo-proteins

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are the very substances which in many cases aggravate and exaggerate these conditions.

The feeding of *whole* yeast to individuals with rheumatic tendencies is actually known to bring on rheumatic pains, stiffness and swelling of the joints. These effects are attributed to substances in the yeast and are not caused by the isolated, concentrated vitamine.

Summary: Since modern investigations have made it possible to extract from the deleterious substances in yeast an active preparation of the vitamine, it is no longer necessary to feed whole yeast.

Each Yeast Vitamine-Harris Tablet, by actual biological test, contains approximately the amount of water-soluble Vitamine found in an ordinary domestic cake of bakers' yeast.

Dosage: Yeast Vitamine-Harris Tablets are a valuable adjunct to any diet, but should in no way modify the selection of a food supply complete in other essential food factors; with due regard to nutrition value, caloric value, palatability, digestability and assimilation.

Since the tablets contain a highly concentrated stimulative food product only, and are free from any kind of drug, they can be added to any other food and are compatible with all medication.

The tablets can be taken whole; two, three times daily, before meals, or can be crushed, dissolved in boiling water and consumed as a broth—with salt to taste—or can be added to other food. It will not endure prolonged heating with other foods.

The youngest infant should not receive less than two tablets in twenty-four hours.

Yeast Vitamine-Harris Tablets are carefully standardized by biological tests on young animals, are uniform in character, concentrated in volume, convenient, palatable and keep indefinitely.

Illustrated booklet or case reports furnished on request. Package of 50 Tablets, $1.50. Prepared by the HARRIS LABORATORIES, Tuckahoe, New York.

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Cough unaccompanied by expectoration is a frequent cause of aggravation and extension of the inflammatory process in bronchitis. In the dry, congested stage, treatment should aim to increase the mucous secretion, and, until a free secretion is established, to soothe the mucous membrane and prevent the harmful unproductive paroxysms of cough.

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Besides these points of pharmaceutical superiority, there can be no question of the fact that the ingredients are selected with a view to producing a therapeutically effective compound.

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THE ADVANTAGES OF CINCHOPHEN

Cinchophen has advantages over the salicylates, in conditions supposedly due to retention of uric acid of a rheumatoid or neuralgic character. If in some cases salicylism is observed, as it may when sodium bicarbonate is not given conjointly as recommended, or the patient happens to be one uncommonly susceptible to the drug, it is never so pronounced as when the older remedies are employed. Cinchophen is less irritant to the renal tissues and less depressant. Albuminaria, when this occurs, is certainly less noticeable. In view of these facts, it should be given when the salicylates are not well borne or when they have failed to give relief.

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'I have used Peacock's Bromides in infantile convulsions and chorea," says Loeser, "and find it very useful in these conditions, since it is very effective and does not disorder the stomach. A complete cure was effected in two cases. In chorea I used it in connection with Fowler's solution in increasing doses."

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The unvariable certainty, agreeableness and singular promptness with which Ergoapiol (Smith) relieves the several varieties of amenorrhea and dysmenorrhea has earned for it the unqualified endorsement of those members of the profession who have subjected it to exacting clinical tests.

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Sig. two teaspoonfuls 3 times daily (undiluted) before meals.

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